OKI

OL400*e*/400*ex*/41 Oex LED Page Printer

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MAINTENANCE MANUAL

PREFACE

This Maintenance Manual describes the field maintenance methods for OL400e, OL400ex and 0L41 Oex LED Page Printers.

This manual is written for use by the maintenance personnel. Please note that you should refer to the USER'S MANUAL for the handling and operating methods of the equipment.

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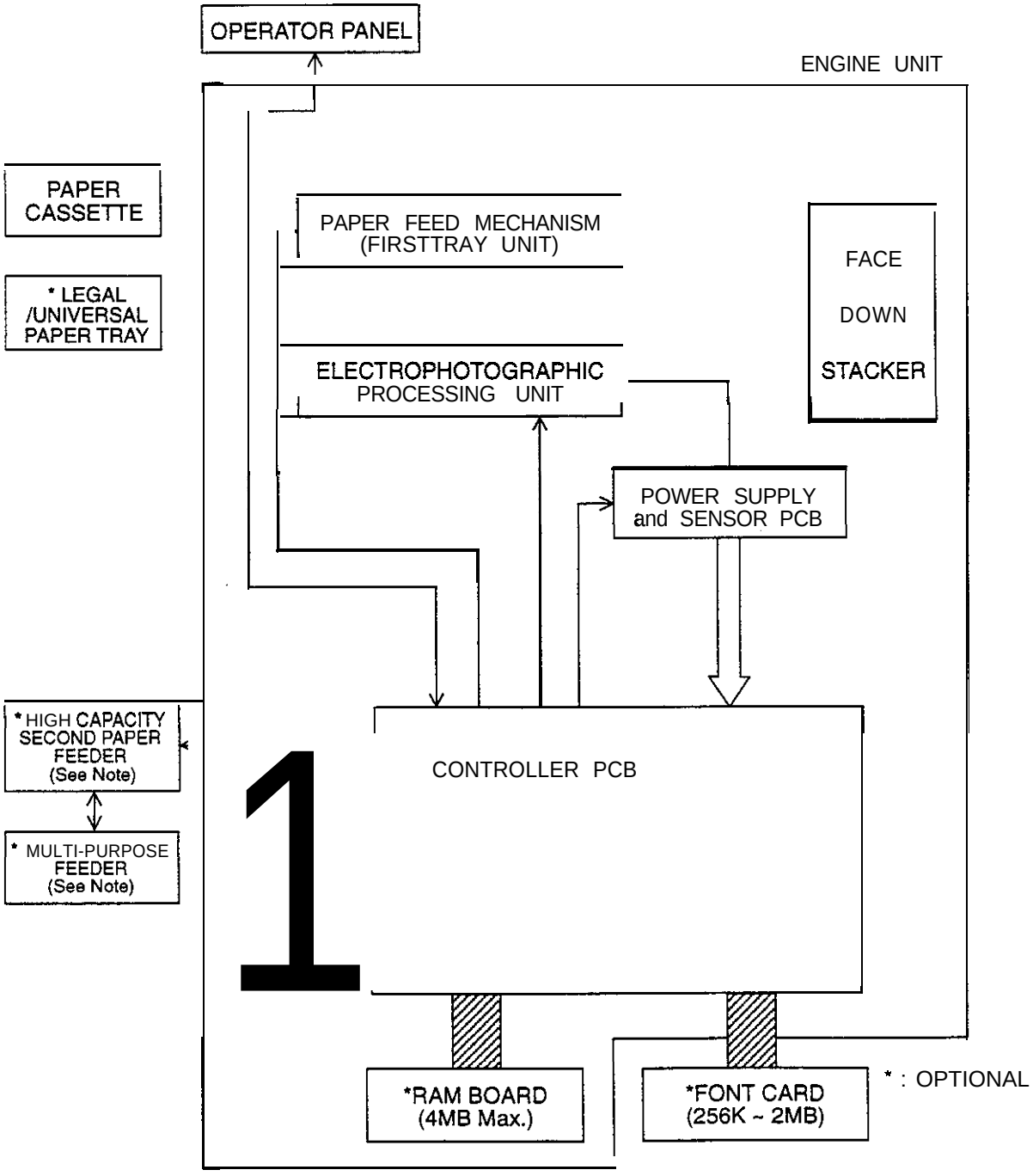
1. CONFIGURATION

1. CONFIGURATION

1.1 System Configuration

OL400e, 400ex and OL410ex each consists of control and engine blocks in the standard configuration, as shown in Figure 1-l.

In addition, the options marked with asterisk(') are available.



Note: Available from S/N 307AXXXXX for OL400e.

Figure l-1

1.2 Printer Configuration

The printer unit consists of the following hardware components:

- Electrophotographic Processor
- Paper Feeder
- Controller
- Operator Panel
- Power Supply Unit

The printer unit configuration is shown in Figure 1-2.

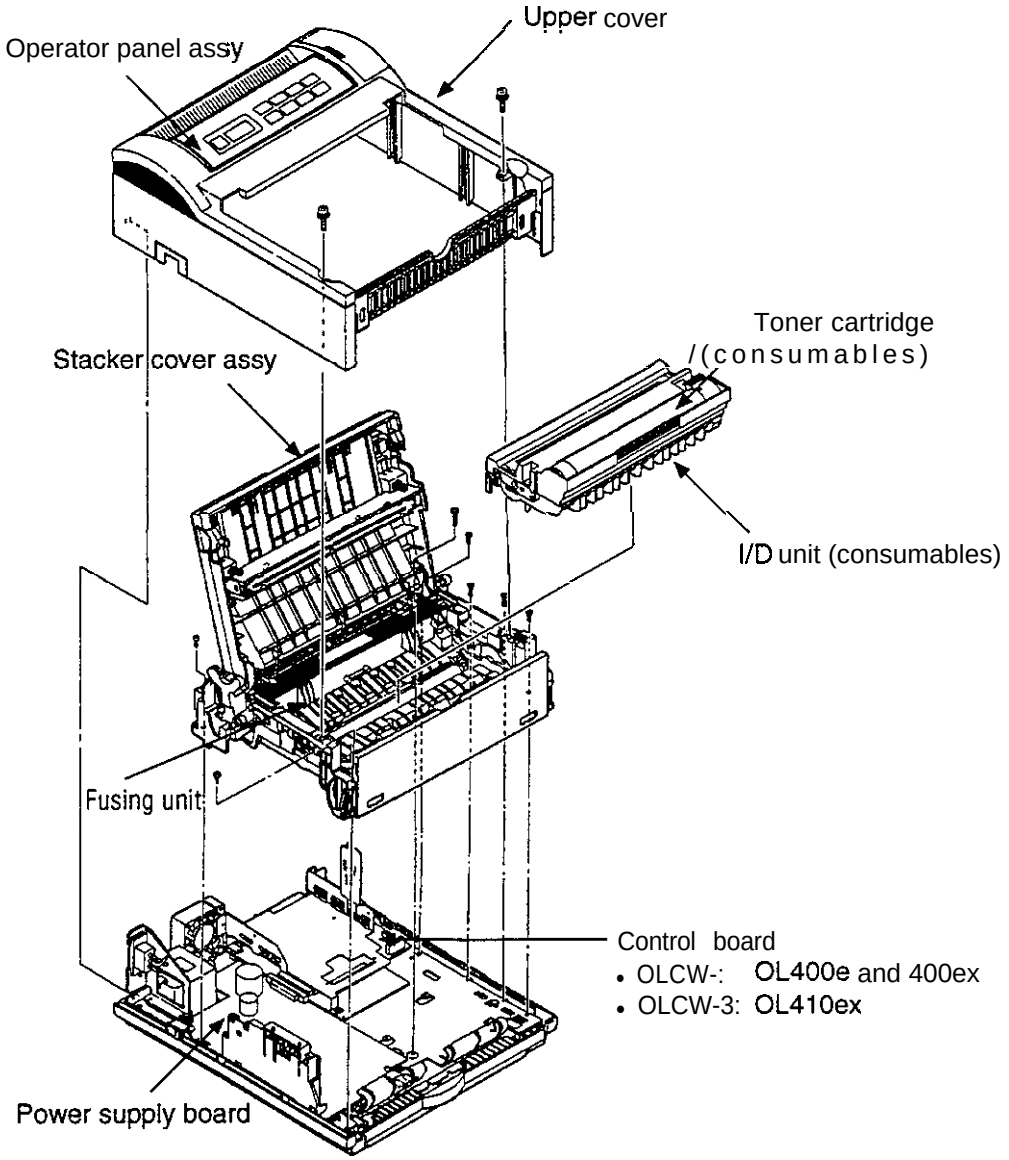
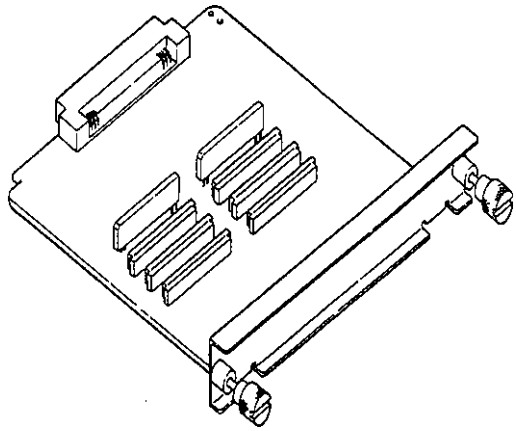


Figure 1-2

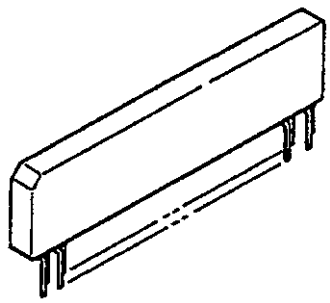
1.3 Optional Configuration

The options shown below are available for use with OL400e series printers. These are available separately from the printer unit.

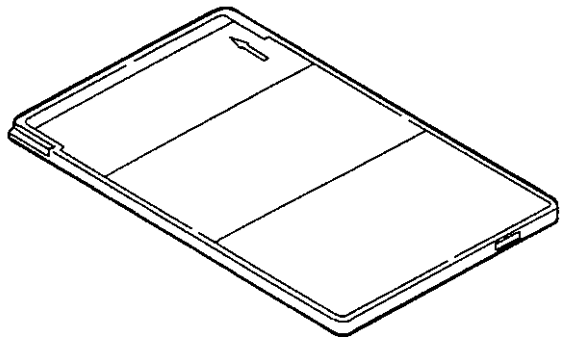
(1) 1MB Memory Expansion Board (OL400e, 400ex and 410ex)



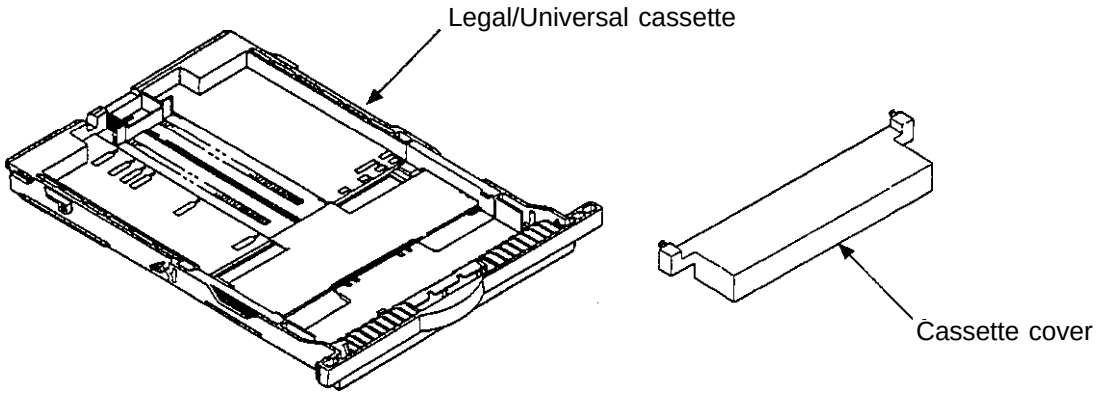
(2) 1MB Chip Set Kits (4M Bit D-RAMx2) (OL400e, 400ex and 41 Oex)



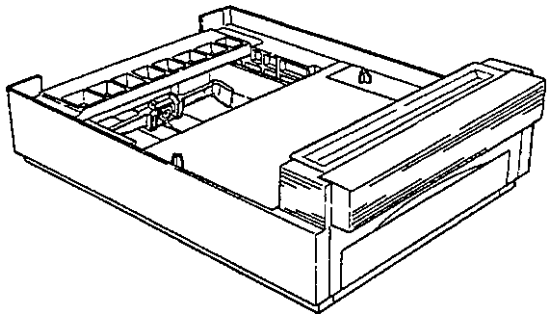
(3) Font Card (OL400e, 400ex and 410ex)



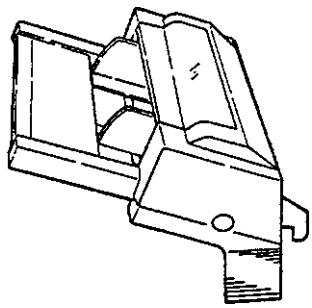
(4) Legal/Universal Paper Cassette (OL400e, 400ex and 410ex)



(5) High Capacity Second Paper Feeder (OL400ex and 410ex)



(6) Multi-Purpose Feeder (OL400ex and 410ex)



1.4 Specification

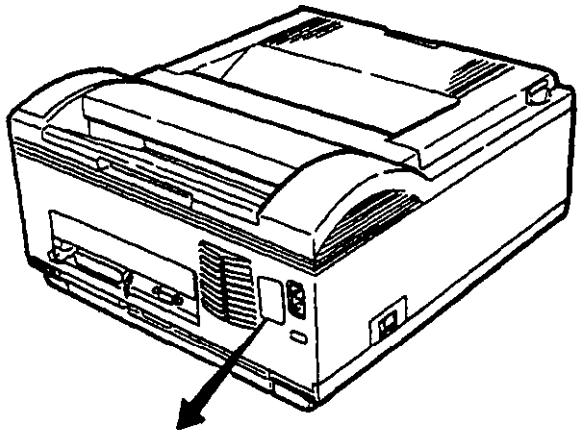
(1)	Type	Desktop
(2)	External dimensions (excludes protruding portion)	Height 6.3" (160 mm) Width 12.6" (320 mm) Depth 14.17" (360 mm)
(3)	Weight	6 kg
(4)	Developing method Exposing method	Dry electrophotography LED stationary head
(5)	Paper used	<Type> • Standard paper -Xerox 4200 (20 Ibs) • Application paper (manual face-up feed) – Label – Envelope – OHP paper (Transparency) <Size> • Standard sizes – Letter (ODA) – Legal (option) – Executive – Envelope – A4 (OEL) - A5 – B5 - A6 • Applicable sizes -Width: 3.94" to 8.5" (100 to 216 mm) – Length: 5.83" to 14" (148 to 355.6 mm) <Thickness> -Automatic feed: 16 to 24 lbs (60 to 90 g/m*) -Manual feed: Label, OHP paper (transparency) Envelope
(6)	Printing speed	First print: 25 sec. Continuous print: 4 sheets/min. for letter size paper Warm-up time: 60 sec. [at room temperature 77°F (25°C) and rated voltage (120 VAC)]
(7)	Paper feeding method	Automatic feed or manual feed
(6)	Paper delivery method	Face down/face up
(9)	Resolution	300 x 300 dots/inch
(10)	Power input	120 VAC + 5.5%, -15% (ODA) 230 VAC + 10%. - 14% (ODNOEL)

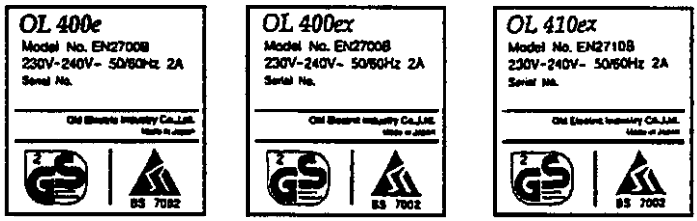
(11) Power consumption	Peak:	Approx. 600W
	Typical operation:	Approx. 80W
	Idle:	Approx. 40W
	Power save mode:	Approx. 15W
(12) Temperature and humidity	During operation:	50 to 90°F (10 to 32°C)
	In storage:	14 to 110°F (-10 to 43°C)
(13) Noise	During operation:	50 dB (A) or less
	Standby:	45 dB (A) or less
(14) Consumables	Toner cartridge kit	2,000 (5% duty)
	Image drum cartridge	20,000 (at continuouts printing)
		15,000 (3 page/job)
		10,000 (1 page/job)

1.5 Safety Standards

1.5.1 Certification Label

The safety certification label is affixed to the printer in the position described below.

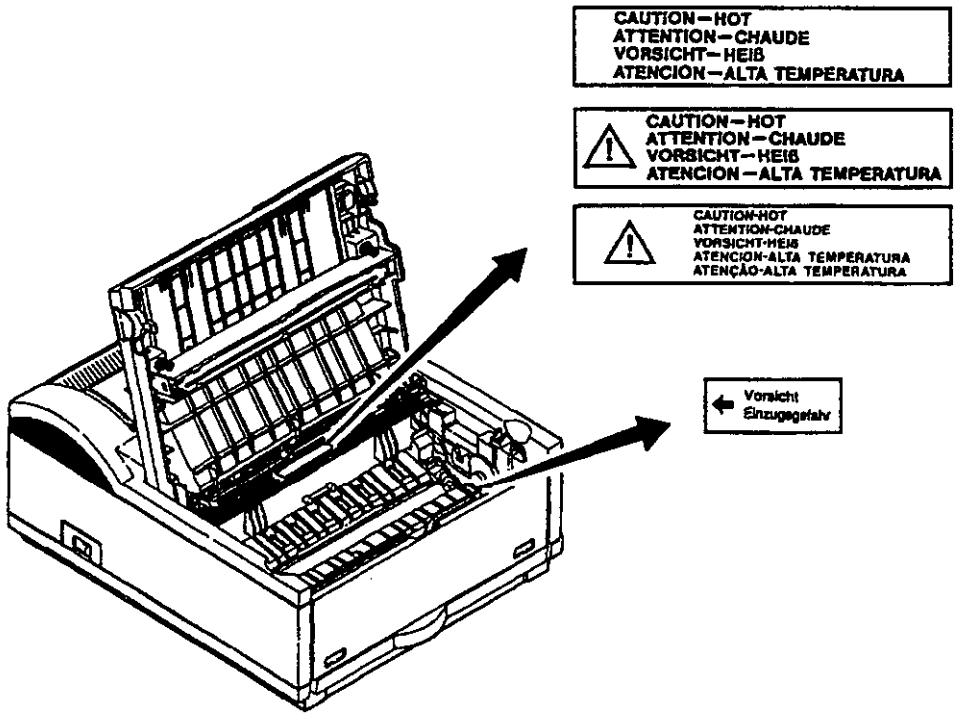




1.5.2 Warning Label

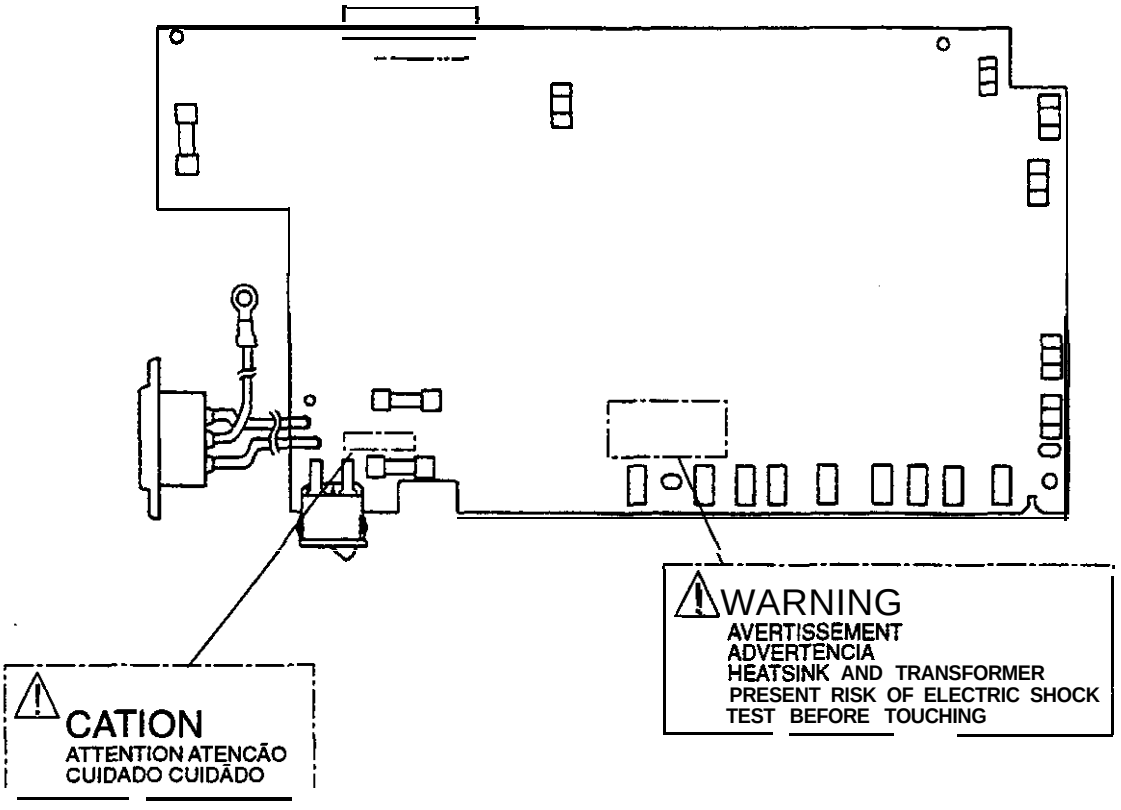
The warning labels are affixed to the sections which may cause bodily injury.

Follow the instructions on warning labels during maintenance.



1.53 Warning/Caution Marking

The following warning and caution markings are made on the power supply board.



ENGLISH

Heatsink and transformer core present risk of electric shock. Test before touching.

FRENCH

Le dissipateur thermique et le noyau du transformateur présentent des risques de choc électrique. Testez avant de, manipuler.

SPANISH

Las disipadores de color el núcel del transformador pueden producir un choque eléctrico. Compruebe antes de tocar.

PORTUGUESE

0 dissipador de calor e o núcleo do fransiormador apresentam risco de choque elétrico. Teste antes de focar.

ENGLISH

Circuits maybe live after fuses open.

FRENCH

Il se peut que les circuits soient sous tension une fois que les fusibles ont éfé rerirés.

SPANISH

Las circuitos pueden estar activos una vez que se hayan abierio los fusibles.

PORTUGUESE

Os circuitos podem estar energizados após os fusiveis se queimarem.

2. OPERATION DESCRIPTION

2. OPERATION DESCRIPTION

OL400e, OL400ex and OL410ex consists of a control board, a power supply/sensor board, an operator panel and an electrophotographic process mechanism.

The control board receives data via the host I/F, it then decodes, edits and stores the data in memory. After completing the editing of a single page of data, it references the font memory and generates bit image data, which is transferred to the LED head in one dot line units.

Through the electrophotographic process mechanism, the data is printed on the paper.

The operator panel is used for operations and status display.

OL400e and OL400ex block diagram is shown in Figure 2-l.

OL410ex block diagram is shown in Figure 2-2.

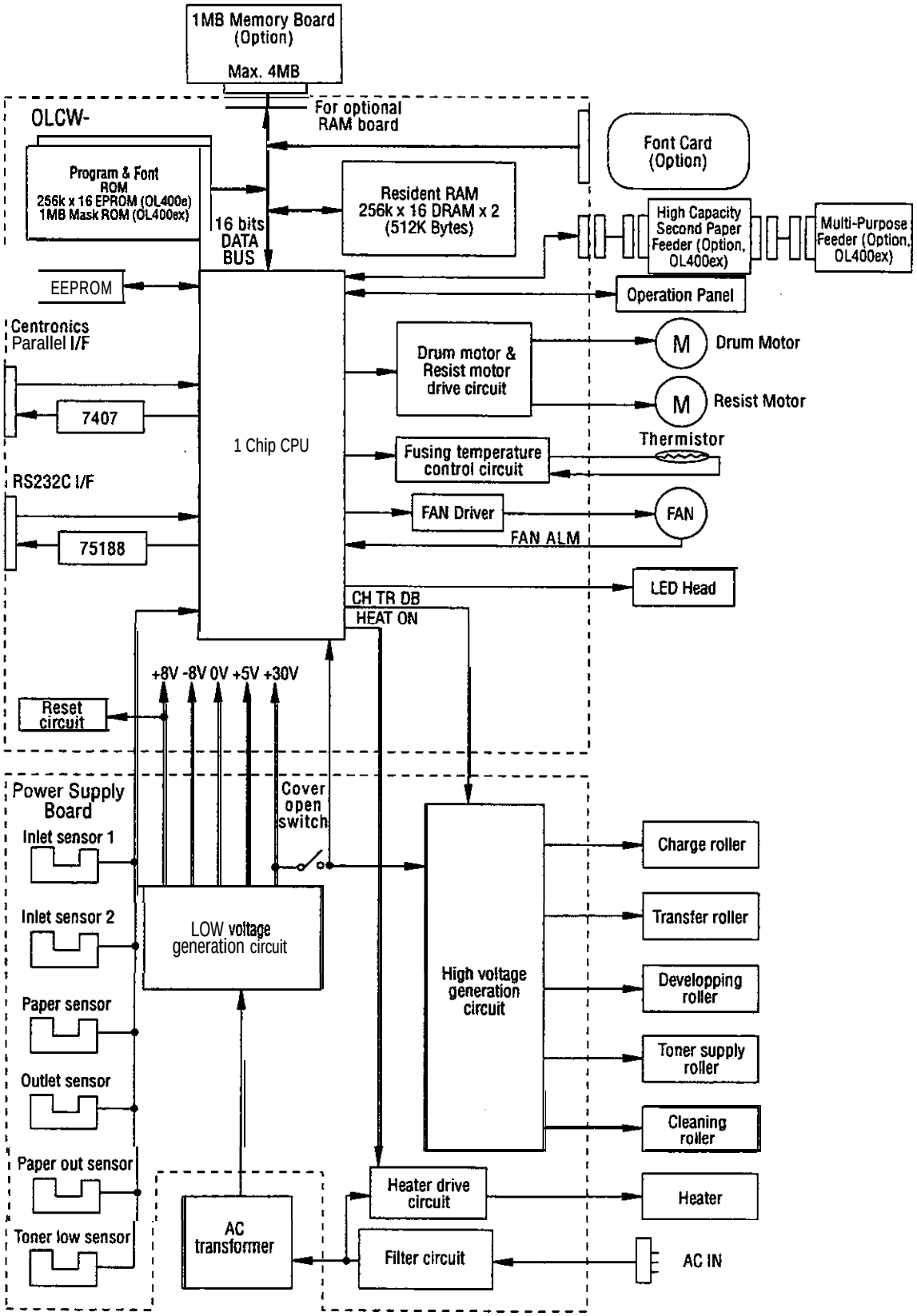


Figure 2-1 OL400e and OL400ex Block Diagram

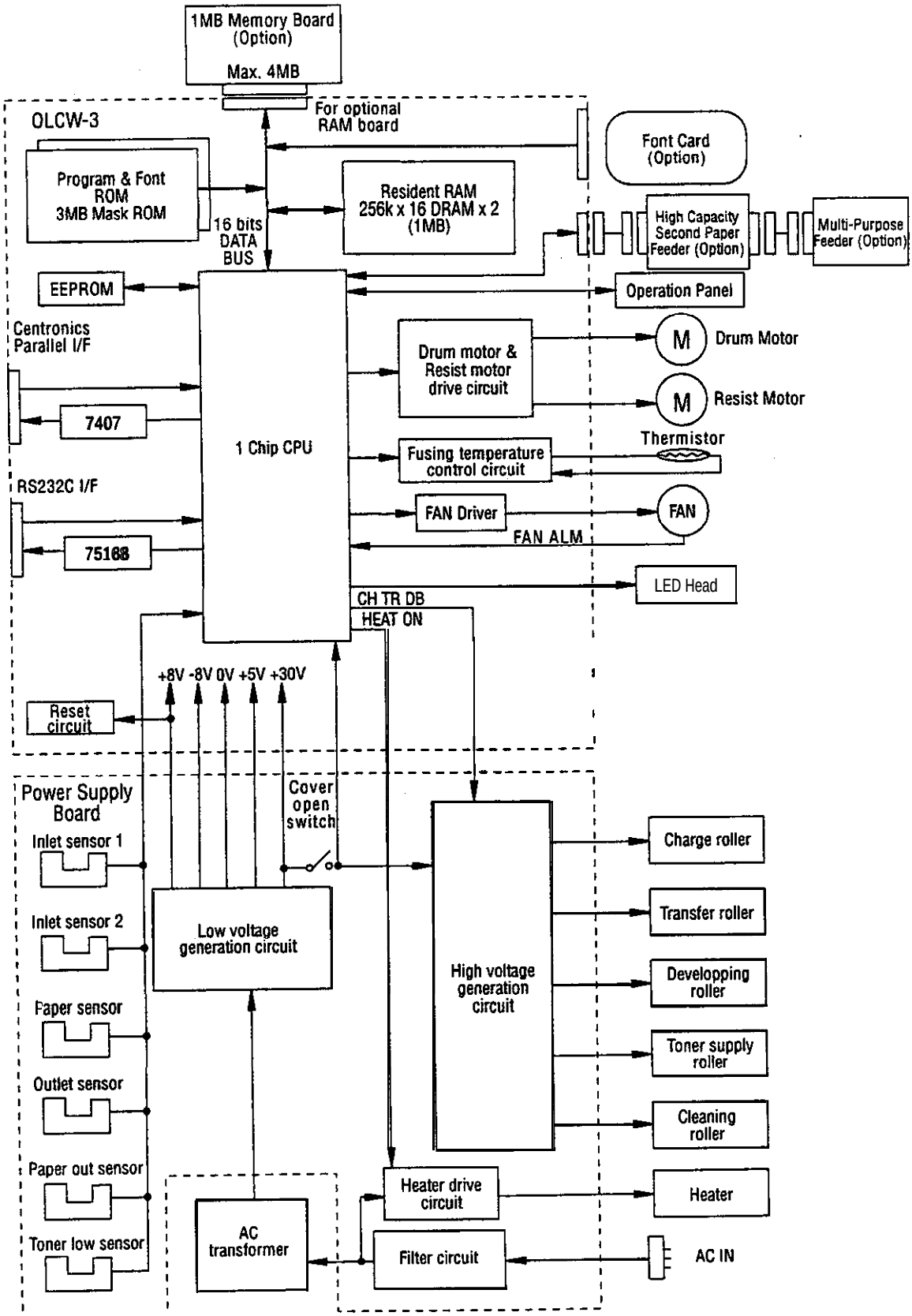


Figure 2-2 OL410ex Block Diagram

2.1 Control Board

The control board consists of a single chip CPU, a Program & Font ROM, a DRAM, an EEPROM, a host interface circuit, and a mechanism driving circuit.

(1) Single chip CPU

The single chip CPU is a custom CPU (32-bit internal bus, 16-bit external bus, 15.9744 MHz clock) which incorporates the RISC CPU and its peripheral devices, and has the following functions:

Built-in device	Function
Chip select controller Bus controller DRAM controller	Control of ROM, DRAM and I/O device
DMA controller	Transfer of image data from DRAM to video output port
Parallel interface controller	Control of Centronics parallel interface
Serial interface controller	Control of RS-232C serial interface
Video output port LED STB output port	Control of LED head
Timer	Generation of various control timing Monitoring of paper running and paper size
Serial I/O port	Control of operator panel, EEPROM, and options
I/O port	Input and output of sensor and motor signals

(2) Program & Font ROM

The Program & Font ROM stores the equipment program and various types of fonts. EPROM or Mask ROM is used as an Program & Font ROM. The mounting location of this Program & Font ROM varies depending on the type of ROM (for the mounting location see 7.4).

(3) DRAM

The DRAM is a resident memory (OL400e and 400ex: 512KB/OL410ex: 1MB) used as a buffer, stores edited data, image data, DLL data and macro data.

(4) EEPROM

1,024 bit-Electrically Erasable PROM (EEPROM), is loaded with the following kinds of data.

- Menu data
- Various counter data (Page counter, Drum counter)
- Adjusting parameters (LED head drive time, print start position, paper feed length)

(5) Parallel Interface

Parallel data is received from a host system via parallel interface which conforms to the Centronics specification.

(6) RS232C Serial Interface

Serial data is sent to and received from a host system via serial interface which conforms to EIA RS232C.

Following items are selectable:

Flow control:	DTR HI/DTR LO/XONXOFF/RBSTXON
Baud rate:	300/600/1200/2400/4800/9600/19200
Data bits:	7 BITS/8 BITS
Parity:	NONE/EVEN/ODD
Minimum busy:	200 mSEC/1 SEC

2.2 Power Supply Board

The power supply board consists of an AC filter circuit, a low voltage power supply circuit, a high voltage power supply circuit, heater drive circuit, and photosensors.

(1) Low Voltage Power Supply Circuit

This circuit generates the following voltages.

Output voltage	Use
+5 V	Logic circuit supply voltage
+30 v	Motor and fan drive voltage and source voltage for high-voltage supply
+8 V	RS-232C line voltage
-6 V	RS-232C line voltage and analog circuit supply voltage

(2) High Voltage Power Supply Circuit

This circuit generates the following voltages required for electrophotographic process from +30 V, according to the control sequence from the control board. When cover open state is detected, +30 V supply is interrupted automatically to stop the supply of all high-voltage outputs.

output	Voltage	Use	Remarks
CH	-1.35 KV	Voltage applied to charging roller	
DB	-300 V/+300 v	Voltage applied to developing roller	
SB	-450 V/ 0 v	Voltage applied to toner supply roller	
TR	+500 V to +4 KV/-750 V	Voltage applied to transfer roller	Variable
CB	+400 v	Voltage applied to clearing roller	

(3) Photosensor

The photosensor mounted on this power supply board monitors the paper running state during printing.

The sensor layout diagram is shown in Figure 2-3.

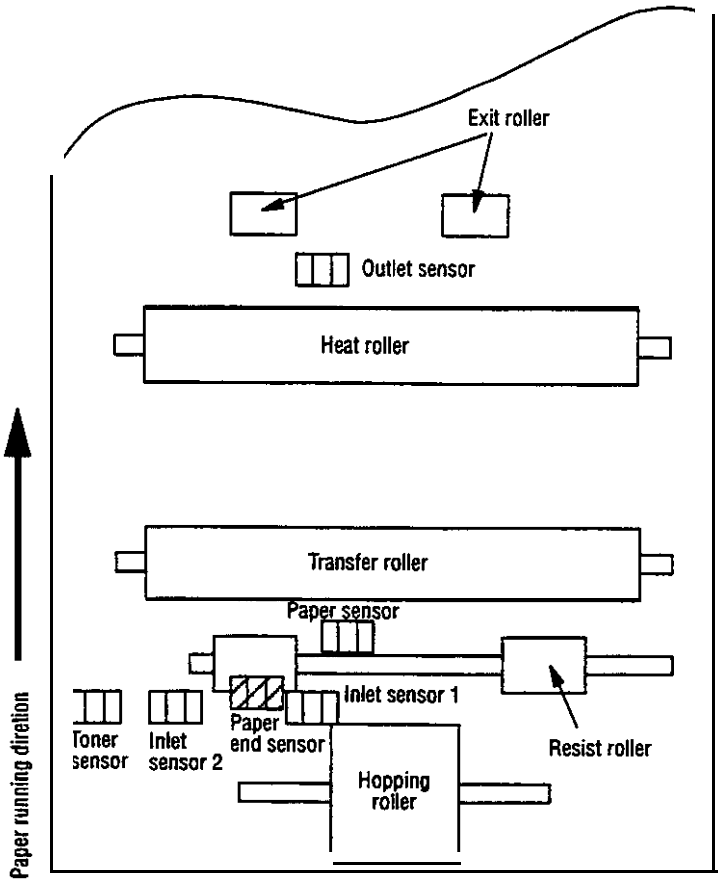


Figure 2-3

Sensor	Function	Sensing state
Inlet sensor 1	Detects the leading part of the paper and gives the supervision timing for switching from hopping operation to feeding operation. Monitors paper feeding situation and paper size based on the paper arrival time and running time.	ON: Paper exists. OFF: No paper exists.
Intel sensor 2	Detects the form width.	ON: A4 or larger OFF: Smaller than A4
Paper sensor	Detects the leading portion of the paper. Monitors the paper feeding situation.	ON: Paper exists. OFF: No paper exists.
Outlet sensor	Monitors the paper feeding and size according to the time of arrival to and leaving past the sensor.	ON: Paper exists. OFF: No paper exists.
Paper end sensor	Detects the end of the paper.	ON: Paper exists. OFF: No paper exists.
Toner low sensor	Detects the lack of toner.	

2.3 Electrophotographic Process

2.3.1 Electrophotographic Process Mechanism

This mechanism actuates the printing of image data supplied by the control board on the paper by electrophotographic process.

The layout of the electrophotographic process mechanism is shown in Figure 2-4.

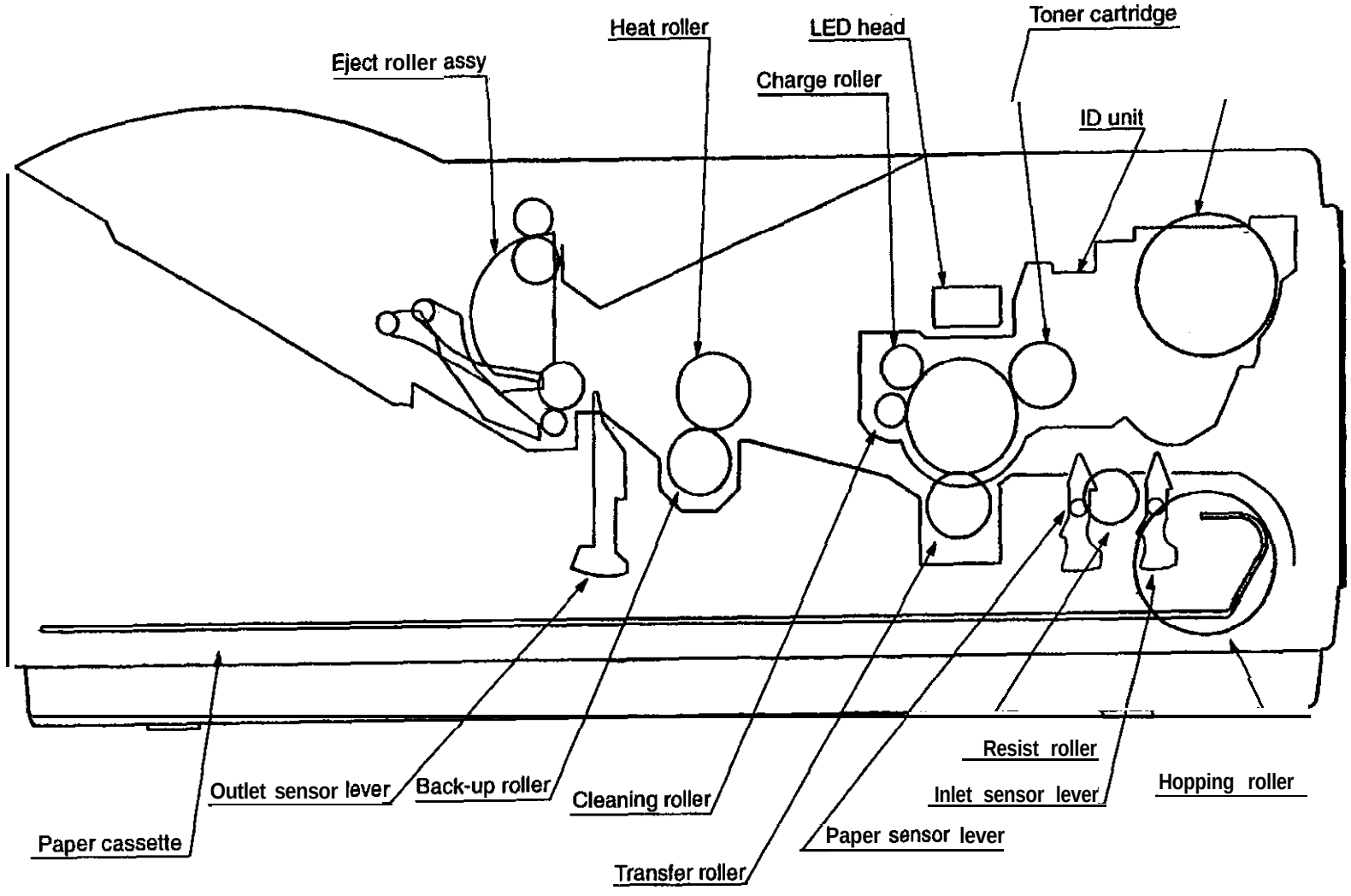

Heat roller
LED head
Toner cartridge
Eject roller assy
Charge roller
ID unit
Resist roller
Outlet sensor lever
Back-up roller
Cleaning roller
Inlet sensor lever
Hopping roller
Paper cassette
Paper sensor lever
Transfer roller

Figure 2-4

(1) Image Drum Unit

The image drum unit consists of a sensitive drum, a charger, and a developer. The unit forms a toner image on the sensitive drum, using a electrostatic latent image formed by the LED head.

(2) Resist Motor

The resist motor is a pulse motor of 48 steps/rotation that is two-phase excited by the signal from the control board. It drives the hopping and resist rollers via two one-way clutches according to the direction of rotation.

(3) Drum Motor

The drum motor is a pulse motor of 48 steps/rotation that is two-phase excited by the signal from the control board and is the main motor of this mechanism.

(4) LED Head

Image data for each dot line from the control board is received by the shift register and latch register. The 2560 LED's are driven to radiate the image data on the image drum.

(5) Fuser

The fuser consists of a heater, a heat roller, a thermistor and a thermostat.

The AC voltage from the power supply board is applied to the heater controlled by the HEATON signal from the control board. This AC voltage heats the heater. The control board monitors the heat roller temperature via the thermistor, and regulates the heater roller to a predetermined temperature (155°C) by connecting or disconnecting the AC voltage supply to the heater.

When an abnormal rise of the heater roller temperature takes place, the thermostat of the heater voltage supply circuit becomes active and forcibly cuts the AC voltage supply.

2.3.2 Electrophotographic Process

The electrophotographic processing is outlined below. The electrophotographic priming process is shown in Figure 2-5.

① Charging

The surface of the image drum is charged uniformly with a negative charge by applying the negative voltage to the charge roller.

② Exposure

Light emitted frdm the LED head irradiates the negativefy charged surface of the image drum. The surface potential of the irradiated portion of the image drum surface becomes lower, forming the electrostatic latent image associated with the print image.

③ Developing and toner recovery

When the negatively charged toner is brought into contact with the image drum, it is attracted to the electrostatic latent image by static electricity, making the image visible.

At the same time, the residual toner on the image drum is attracted to the developing roller by static electricity.

④ Transfer

When paper is placed over the image drum surface, the positive charge which is opposite in polarity to that of the toner, is applied to the reverse side by the transfer roller. The toner is attracted by the positive charge and is transferred onto the paper. This results in the transfer of the toner image formed on the image drum onto the paper.

⑤ Temporary cleaning

Residual toner which remains on the image drum without being transferred is evened out by the cleaning roller and is temporarily attracted to the cleaning roller by static electricity.

⑥ Fusing

The toner image transferred onto the paper is fused to the paper by heat and pressure.

An electrophotographic process timing chart is shown in Figure 2-6.

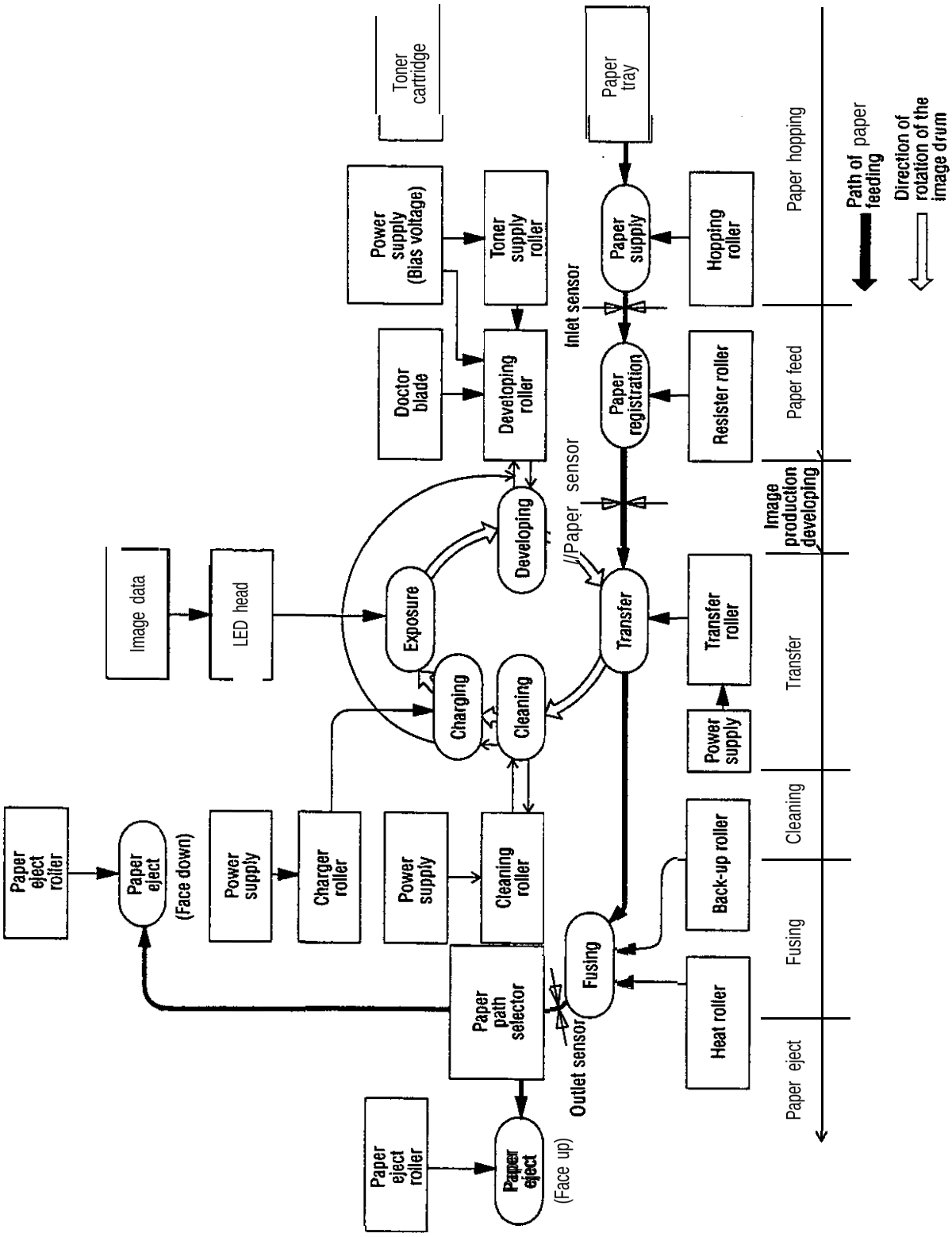

Toner cartridge
Paper tray
Power supply (Bias voltage)
Toner supply roller
Paper supply
Hopping roller
Paper hopping
Path of paper feeding
Direction of rotation of the image drum
Doctor blade
Developing roller
Inlet sensor
Paper registration
Resister roller
Paper feed
Image data
LED head
Exposure
Developing
Paper sensor
Image production developing
Charging
Cleaning
Transfer
Transfer roller
Power supply
Transfer
Paper eject roller
Paper eject (Face down)
Power supply
Charger roller
Power supply
Cleaning roller
Back-up roller
Cleaning
Paper path selector
Fusing
Heat roller
Fusing
Outlet sensor
Paper eject roller
Paper eject (Face up)
Paper eject

Figure 2-5

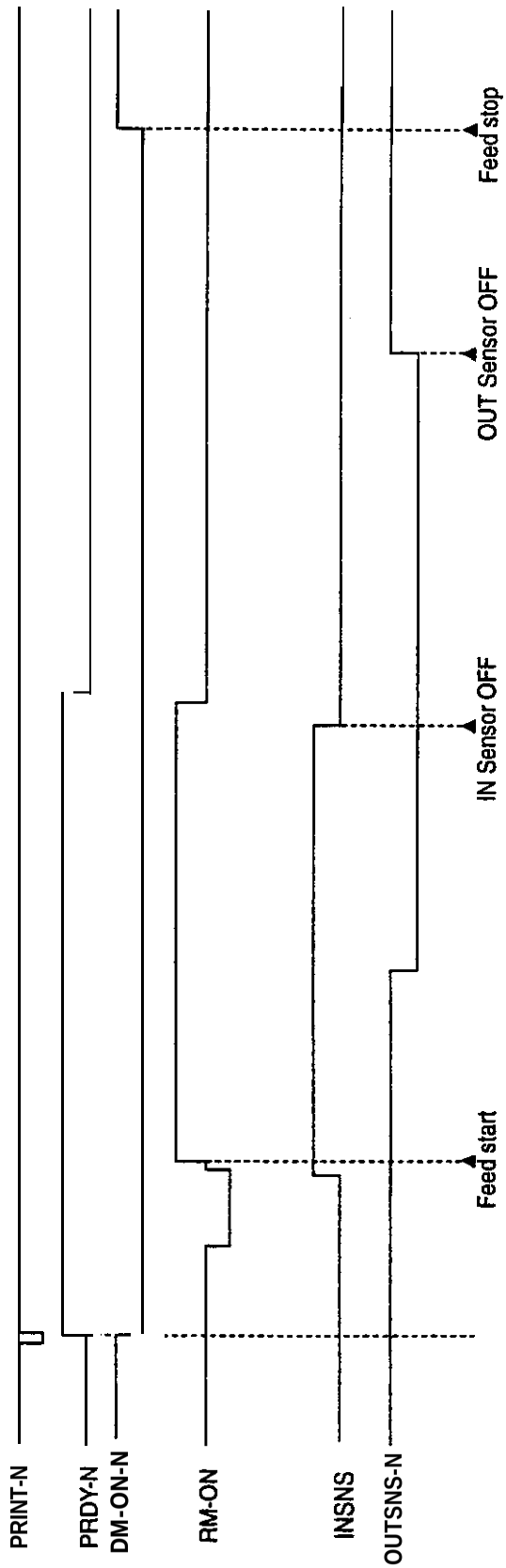
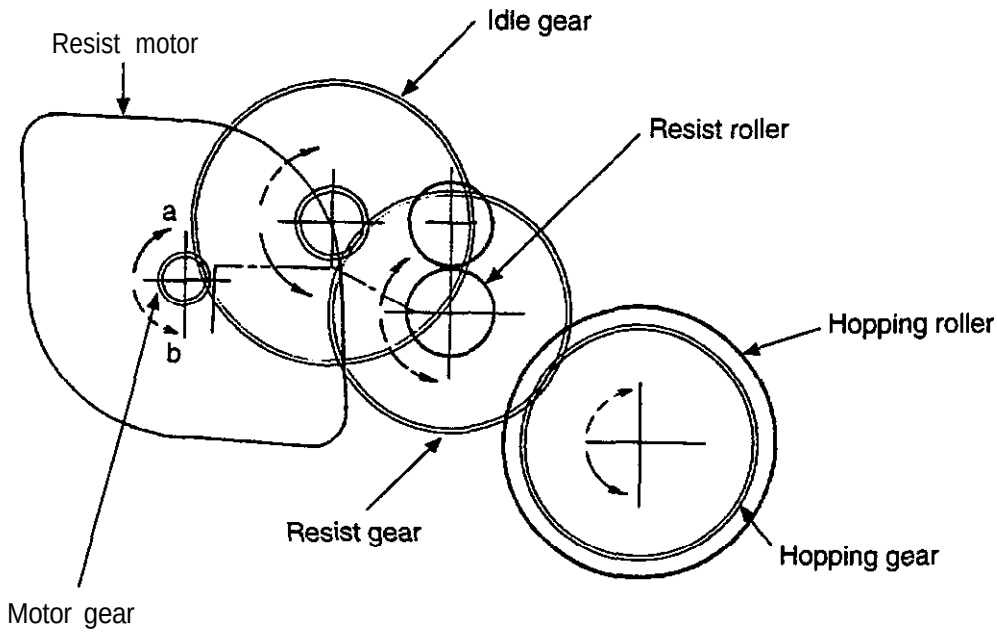

PRINT-N
PRDY-N
DM-ON-N
RM-ON
INSNS
OUTSNS-N
Feed start
IN Sensor OFF
OUT Sensor OFF
Feed stop

Figure 2-6

2.3.3 Process Operation Descriptions

(1) Hopping and Feeding

Hopping and feeding motions are actuated by a single resist motor in the mechanism as shown below:

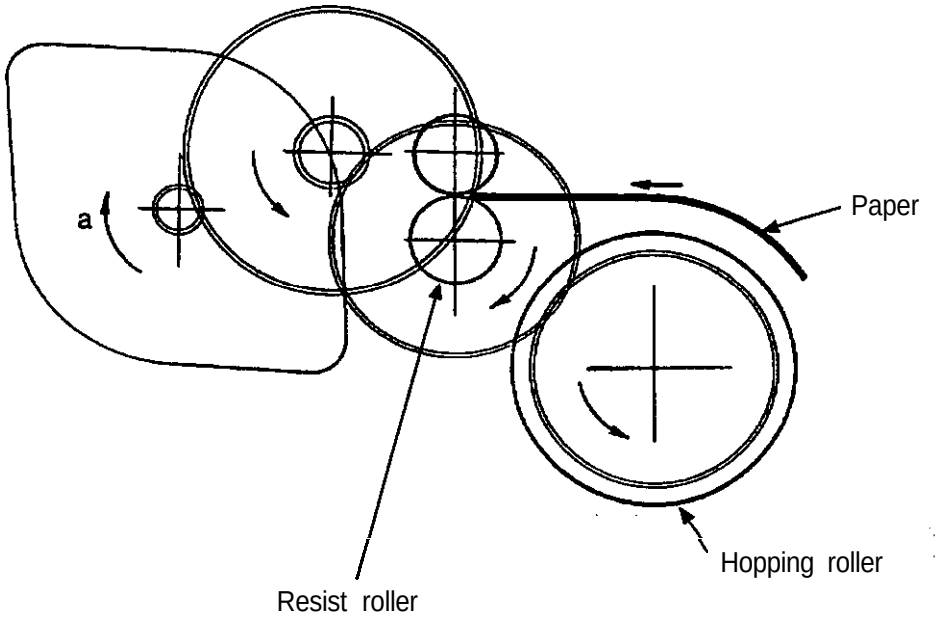


The resist motor turning in direction “a” drives the hopping roller. The resist motor turning in direction "b" drives the resist roller. The resist and hopping gears have one-way bearing, so turning any of these gears in the reverse direction will not transmit the motion to the corresponding roller.

(a) Hopping

① For hopping, the resist motor turns in direction “a” (CW direction) and drives the hopping roller to advance the paper until the inlet sensor turns on (in this case, the resist gear also turns, but the resist roller is prevented from turning by the one-way bearing).

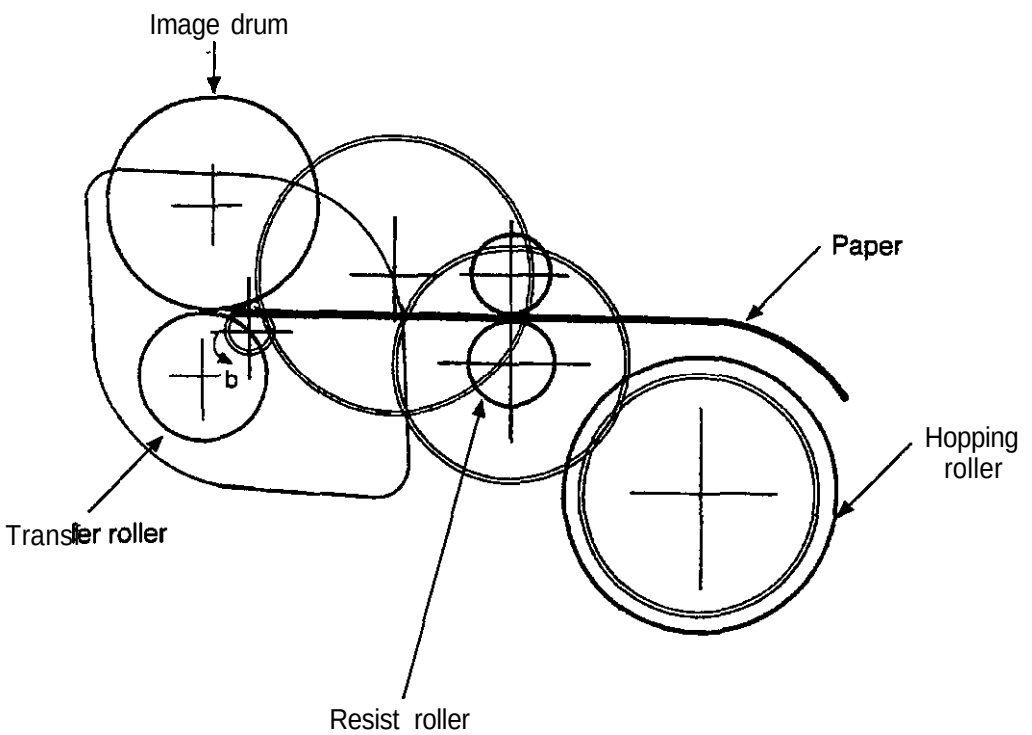
② After inlet sensor is turned on by the paper advance, the paper is further advanced to a predetermined distance until the paper hits the resist roller (the skew of the paper can thus be corrected).



(b) Feeding

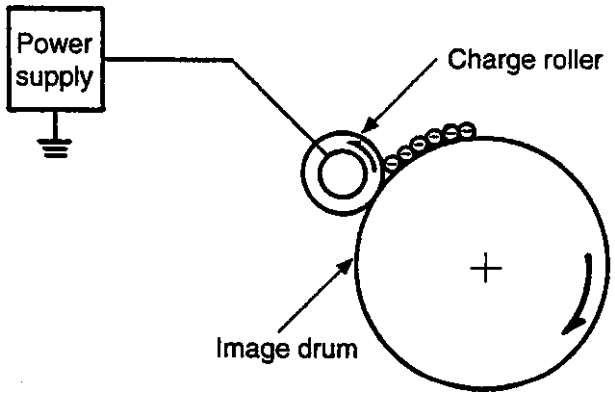
① When hopping is completed, the resist motor turning in direction "b" (CCW direction) drives the resist roller to advance the paper (in this case, the hopping gear also turns, but the hopping roller is prevented from turning by the one-way bearing).

② The paper is further advanced in synchronized to the print data.

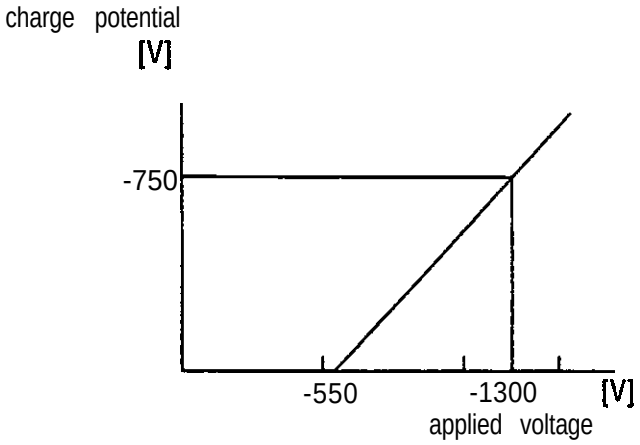


(2) Charging

Charging is actuated by the application of the DC voltage to the charge roller that is in contact with the image drum surface.

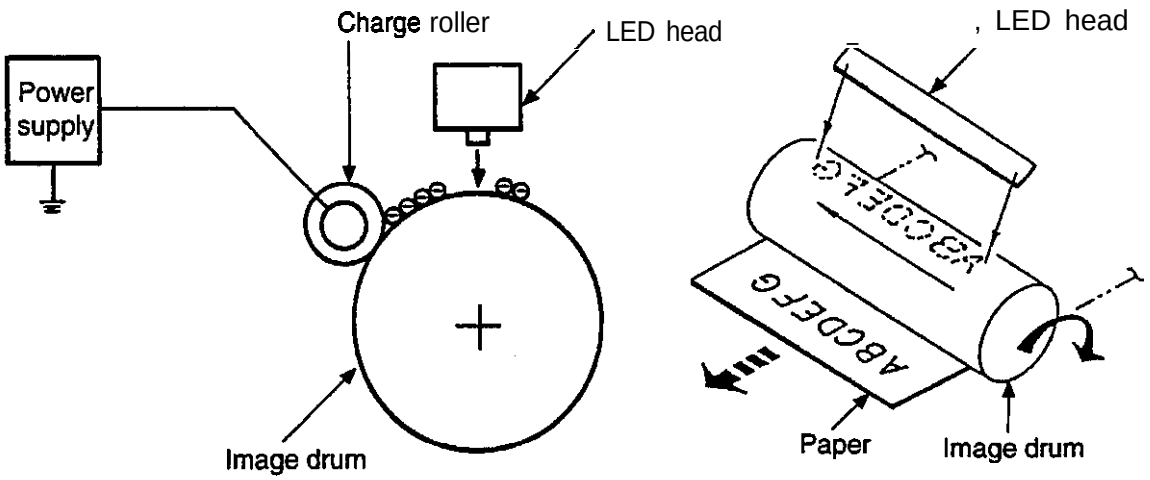


The charge roller is composed of two layers, a conductive layer and a surface protective layer, both having elasticity to secure good contact with the image drum. When the DC voltage applied by the power supply exceeds the threshold value, charging begins. The applied voltage is proportional to the charge potential, with offset of approximately –550V.

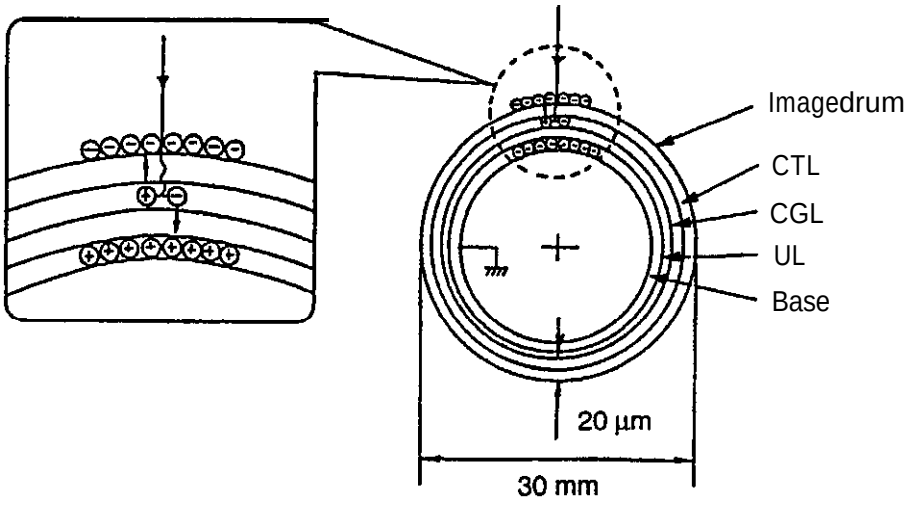


(3) Exposure

Light emitted by the LED head irradiates the image drum surface with a negative charge. The surface potential of the irradiated portion of the image drum drops, forming an electrostatic latent image associated with the image signal.



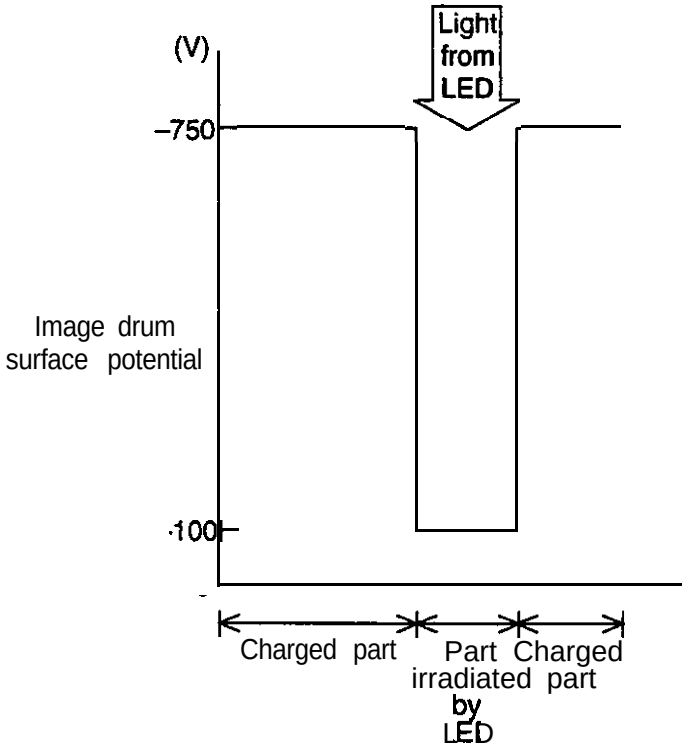
The image drum is coated with an underlayer (UL), a carrier generation layer (CGL), and carrier transfer layer (CTL) on aluminum base. The organic photo conductor layer (OPC). comprising CTL and CGL, is about 20 pm thick.



The image roller surface is charged to about -750 V by the contact charge of the charge roller.

When the light from the LED head irradiates the image drum surface, the light energy generates positive and negative carriers in the CGL. The positive carriers are moved to the CTL by an electrical field acting on the image drum. Likewise, the negative carriers flow into the aluminum layer (ground).

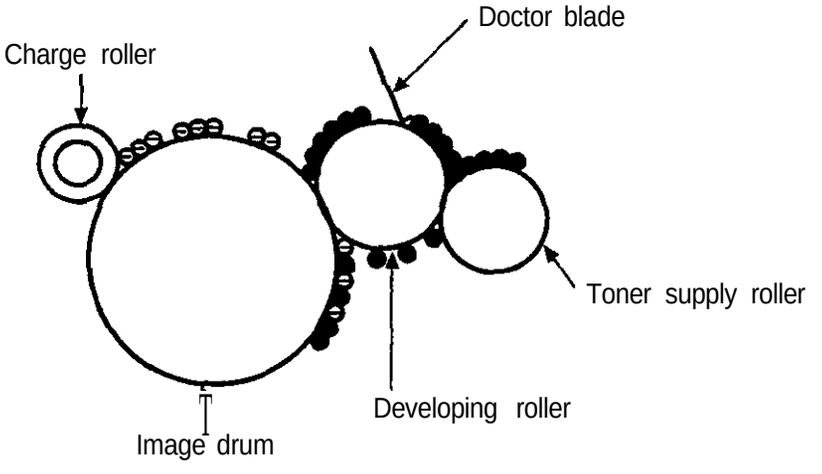
The positive carriers moved to the CTL combine with the negative charges on the image drum surface accumulated by the contact charge of the charge roller, lowering the potential on the image drum surface. The resultant drop in the potential of the irradiated portion of the image drum surface forms an electrostatic latent image on it. The irradiated portion of the image drum surface is kept to about -100 V.



(4) Developing

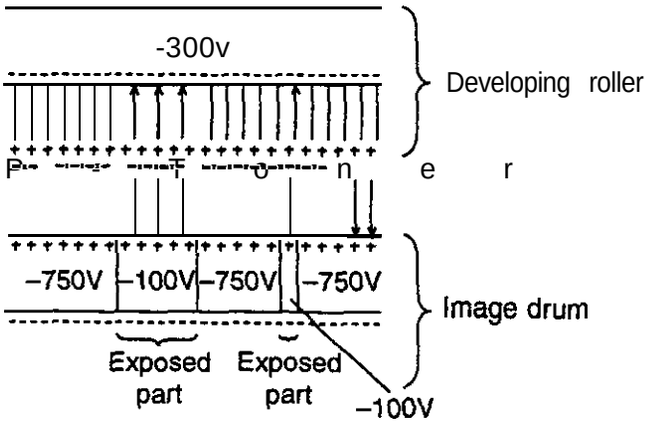
Toner is attracted to the electrostatic latent image on the image drum surface, converting it into a visible toner image. Developing takes place through the contact between the image drum and the developing roller.

① As the toner supply roller rotates while rubbing on the developing roller, a friction charge is generated between the developing roller and the toner, allowing the toner to be attracted to the developing roller (the developing roller surface is charged positive and the toner, negative).



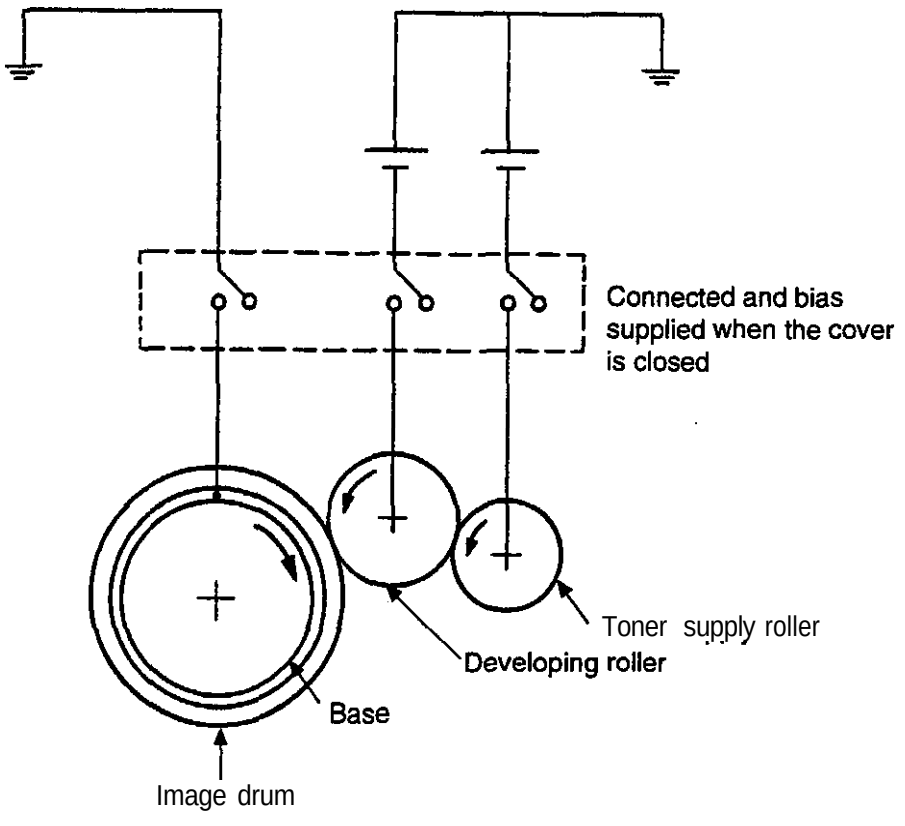
② The toner attracted to the developing roller is scraped off by the doctor blade, forming a thin coat of toner on the developing roller surface.

③ Toner is attracted to the exposed portion (low-potential part) of the image drum at the contact of the image drum and the developing roller, making the electrostatic latent image visible.



An illustration of activities at the contact point of the image drum surface and the developing roller (arrow marks denote the direction of the electric field).

Note: The bias voltage required during the developing process is supplied to the toner supply roller and the developing roller, as shown below. −450 VDC is supplied to the toner supply roller, −300 VDC to the developing roller.

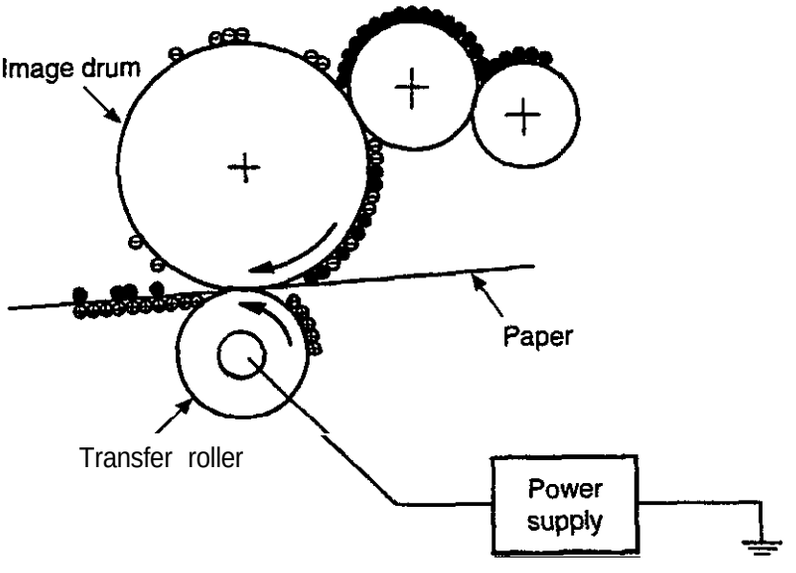


(5) Transfer

The transfer roller is composed of conductive sponge material, and is designed to get the image drum surface and the paper in a close contact.

Paper is placed over the image drum surface, and the positive charge, opposite in polarity to that of the toner, is applied to the paper from the reverse side.

The application of a high positive voltage from the power supply to the transfer roller causes the positive charge inducement on the transfer roller surface, transferring the charge to the paper as it contacts the transfer roller. The toner with negative charge is attracted to the image drum surface, and it is transferred to the upper side of the paper due to the positive charge on the reverse side of the paper.

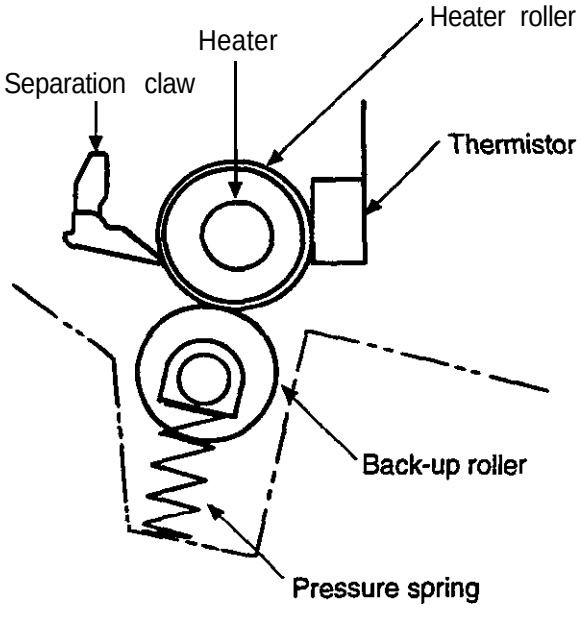


(6) Fusing

When the transfer is completed, the toner image is fused to the paper by heat and pressure as the paper with unfused toner image passes between the heater roller and the back-up roller. The heater roller with Teflon coating incorporates a 400W heater (Halogen lamp), which heats the heat roller.

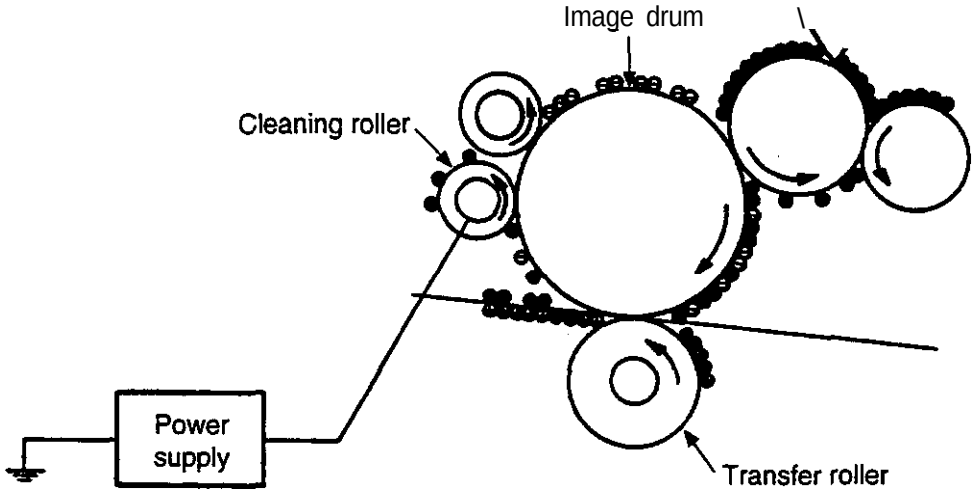
A thermistor which is in contact with the heater roller regulates the temperature of the heater roller at a predetermined level (about 155°C). A safety thermostat cuts voltage supply to the heater off by opening the thermostat in the event of abnormal temperature rises.

The back-up roller is held under a pressure of 2.5 kg applied by the pressure spring on each side.



(7) Cleaning

When the transfer is completed, the residual toner left on the image drum is attracted to the cleaning roller temporarily by static electricity, and the image drum surface is cleaned.



(8) Cleaning of rollers

The charge, transfer and cleaning rollers are cleaned for the following cases:

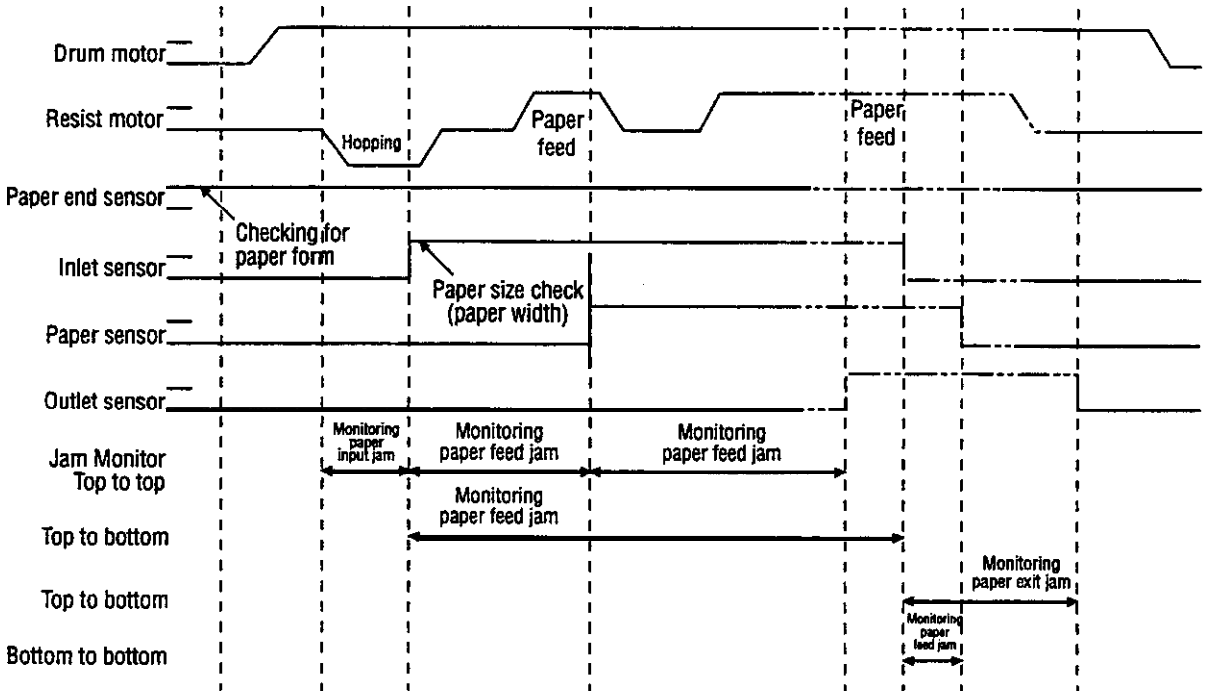
- Warming up when the power is turned on.
- Warming up after the opening and closing of the cover.
- When the number of sheets accumulated reaches 10 or more, and the printout operation ends.

Changes in bias voltage applied to each roller move the attaching toner off the roller to the image drum and return it to the developer.

2.4 Paper Jam Detection

The paper jam detection function monitors the paper condition when the power is turned on and during printing. When any of the following conditions arises, this function interrupts the printing process. If any of the following errors is encountered, printing can be recovered by removing the jammed paper (by opening the upper cover, removing the jammed paper and closing the upper cover).

Error	Cause of error
Paper input jam	• The paper is in contact with the inlet sensor when the power is turned on. • After hopping operation is attempted three times, the leading edge of the paper does not reach the inlet sensor.
Paper feed jam	• The paper is in contact with at the paper sensor when the power is turned on. • The leading edge of the paper does not reach the paper sensor within a predetermined distance since the paper has reached the inlet sensor. • The trailing edge of the paper does not pass over the paper sensor within a predetermined distance after the same has passed over the inlet sensor. • The leading edge of paper does not reach the outlet sensor within a predetermined distance after the paper has reached the paper sensor.
Paper exit jam	• The paper is in contact with the outlet sensor when the power is turned on. • The paper does not pass over the outlet sensor within a predetermined distance after the leading edge of the paper has reached the outlet sensor. • The paper size check for manual feeding finds that the paper size is free size.
Paper size error	• The size of the paper is monitored by the inlet sensor 1. The paper is not detected by the inlet sensor 1 within predetermined distance. • The inlet sensor 2 detects that the size of the loaded paper is A4 or larger, or smaller than A4. The detected paper size differs from the paper size set by command or menu. • The paper size check for manual feeding finds that the paper size is free size.



Paper Feed Timing Chart

Paper Feed Check List

Type of error	Monitor	Standard value	Error	
			Pluse	Minus
Paper feed error	Hopping start to In sensor on	72.0	36.0	-
Paper feed jam	In sensor on to Write sensor on	20.0	20.0	-
Paper feed jam	Write sensor on to Out sensor on	138.0	69.0	-
Paper size error	In sensor on to Out sensor on	Depends on the paper length	45.0	45.0
Paper exit jam	Out sensor on to Out sensor off	Depends on the paper length	45.0	45.0
Paper feed jam	In sensor off to Write sensor off	22.0	22.0	-

Unit : mm

Note: Hyphen "-" in the table represent "no check is done."

Paper Length List

Type	Paper length	Check range	
		Min.	Max.
A4	297.0	252.0	342.0
A5	210.0	165.0	255.0
B5	257.0	212.0	302.0
LETTER	279.4	234.4	324.4
LEGAL 13	330.2	285.2	400.6
LEGAL 14	355.6	285.2	400.6
EXEC	266.7	221.7	311.7
A6	148.0	103.0	193.0
Monarch	190.5	145.5	235.5
COM-10	241.3	196.3	286.3
DL	220.0	175.0	265.0
C5	229.0	184.0	274.0
Free	148.0 ~ 355.6	103.0	400.6

Unit: mm

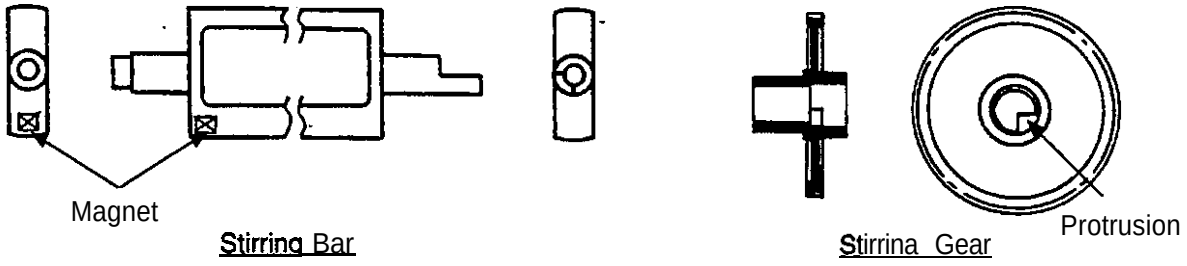
2.5 Cover Open

When the stacker cover is opened, the cover open microswitch on the power/sensor board is turned off to cut +30V suppiy to the high voltage power supply circuit. This results in the interruption of all high-voltage outputs. At the same time, the CVOPN signal is sent to the control board to notify that the microswitch is off, and the control board carries out the cover open process.

2.6 Toner Low Detection

- Device

The Toner Low Detection device consists of a stirring gear which rotates at a constant rate, a stirring bar and a magnet on the stirring bar. The stirring bar rotation is driven by the link to the protrusion in the stirring gear.



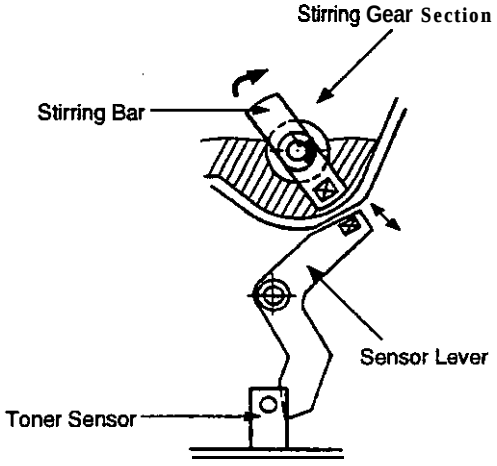
Stirring Bar　　Stirrina Gear

- Operation

Toner Low is detected by monitoring the time interval of the encounter of the magnet set on the sensor lever and the magnet on the stirring bar.

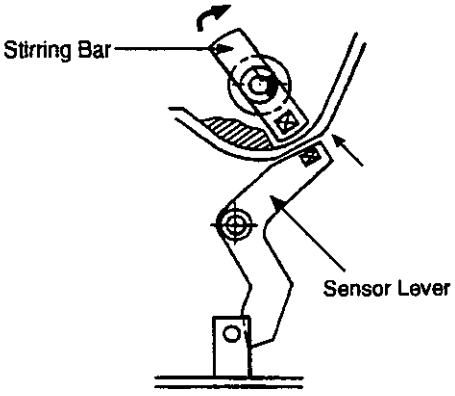
Operation during Toner Full state

- The stirring bar is rotated due to the mechanical transmission of energy originating from the interlocking with the stirring gear.
- Even when the magnet on the stirring bar reaches the maximum height, the stirring bar is pushed by the stirring gear, since the other side is being dipped in the toner.

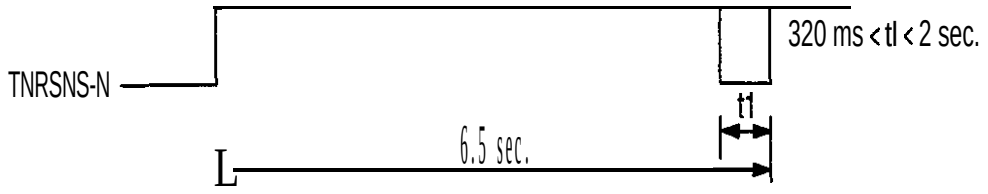


Ooeration durina Toner Low state

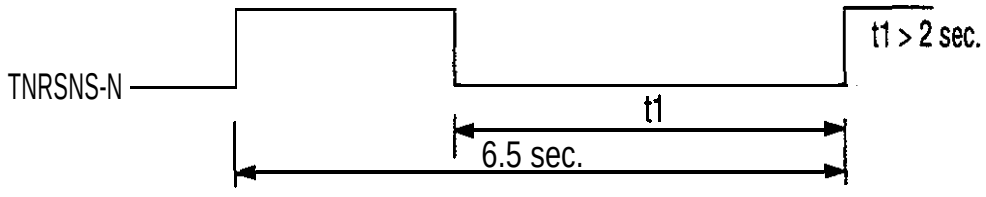
- When the stirring bar reaches the maximum height, it falls to the minimum height due to its own weight, since there is no resistance provided by the toner on the other side. Because of this, the time interval during which it is in encounter with the magnet of the sensor lever gets longer. By monitoring this time interval, Toner Low can be detected.



TONER FULL state



TONER LOW state



- When the Toner Low state is detected 2 times consecutively, Toner Low is established.
- When the Toner Full state is detected 2 times consecutively, Toner Low is cancelled.
- When there is no change with the toner sensor for 2 cycles (6.5 sec. x 2) or more, then the Toner Sensor Alarm is activated.
- The toner sensor is not monitored while the drum motor is in halt.

3. PARTS REPLACEMENT

3. PARTS REPLACEMENT

The section explains the procedures for replacement of parts, assemblies, and units in the field. Only the disassembly procedures are explained here. For reassembly, reverse the disassembly the procedure.

3.1 Precautions for Parts Replacement

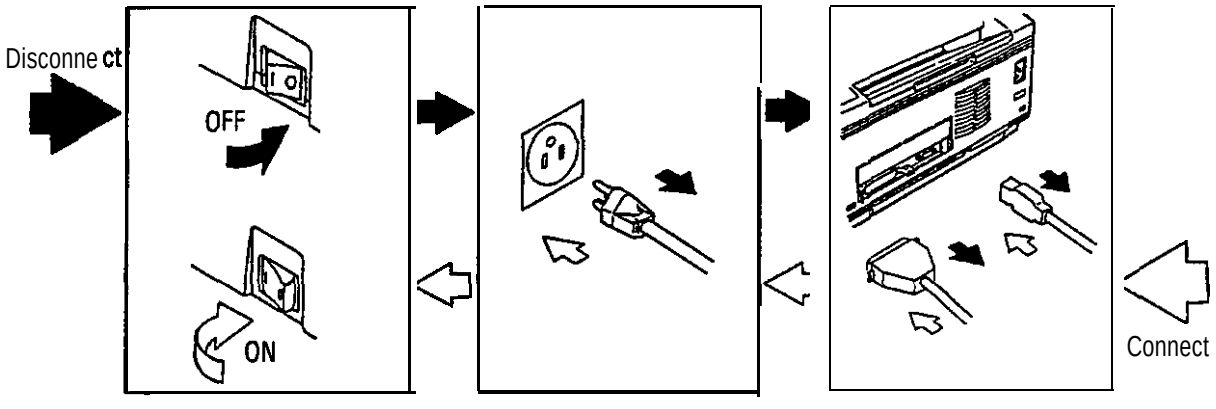
(1) Before starting the parts replacement, remove the AC cable and interface cable.

(a) Remove the AC cable in the following procedure:

i) Turn off ("o") the power switch of the printer
ii) Disconnect the AC inlet plug of the AC cable from the AC receptacle.
iii) Disconnect the AC cable and interface cable from the printer.

(b) Reconnect the printer in the following procedure.

i) Connect the AC cable and interface cable to the printer.
ii) Connect the AC inlet plug to the AC receptacle.
iii) Turn on ("I") the power switch of the printer.



(2) Do not try to disassemble as long as the printer is operating normally.

(3) Do not remove parts which do not need to be touched; try to keep the disassembly to a minimum.

(4) Use specified service tools.

(5) When disassembling, follow the sequence laid out. Parts may be damaged if these sequences are not followed.

(6) Since screws, collars and other small parts are likely to be lost, they should temporarily be attached to the original positions during disassembly.

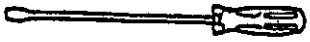
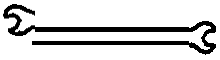
(7) When handling IC's such as microprocessors, ROM and RAM, or circuit boards, do not wear gloves that are likely to generate static electricity.

(8) Do not place printed circuit boards directly on the equipment or floor.

[Service Tools]

The tools required for field replacement of printed circuit boards and units are listed in Table 3-1.

Table 3-1 Service Tools

No.	Service Tools		Q' ty	Place of use	Remarks
1		No. 1-100 Philips screwdriver	1	2~2.5 mm screws	
2		No. 2-100 Philips screwdriver	1	3~5 mm screws	
3		No. 3-100 screwdriver	1		
4		No. 5-200 screwdriver	1		
5		Digital multimeter	1		
6		Pliers	1		
7		5.0 mm wrench	1		
8		Handy cleaner	1		
9		LED Head cleaner	1	Cleans LED head	

3.2 Parts Layout

This section explains the layout of main parts of the equipment.

[Lower base unit]

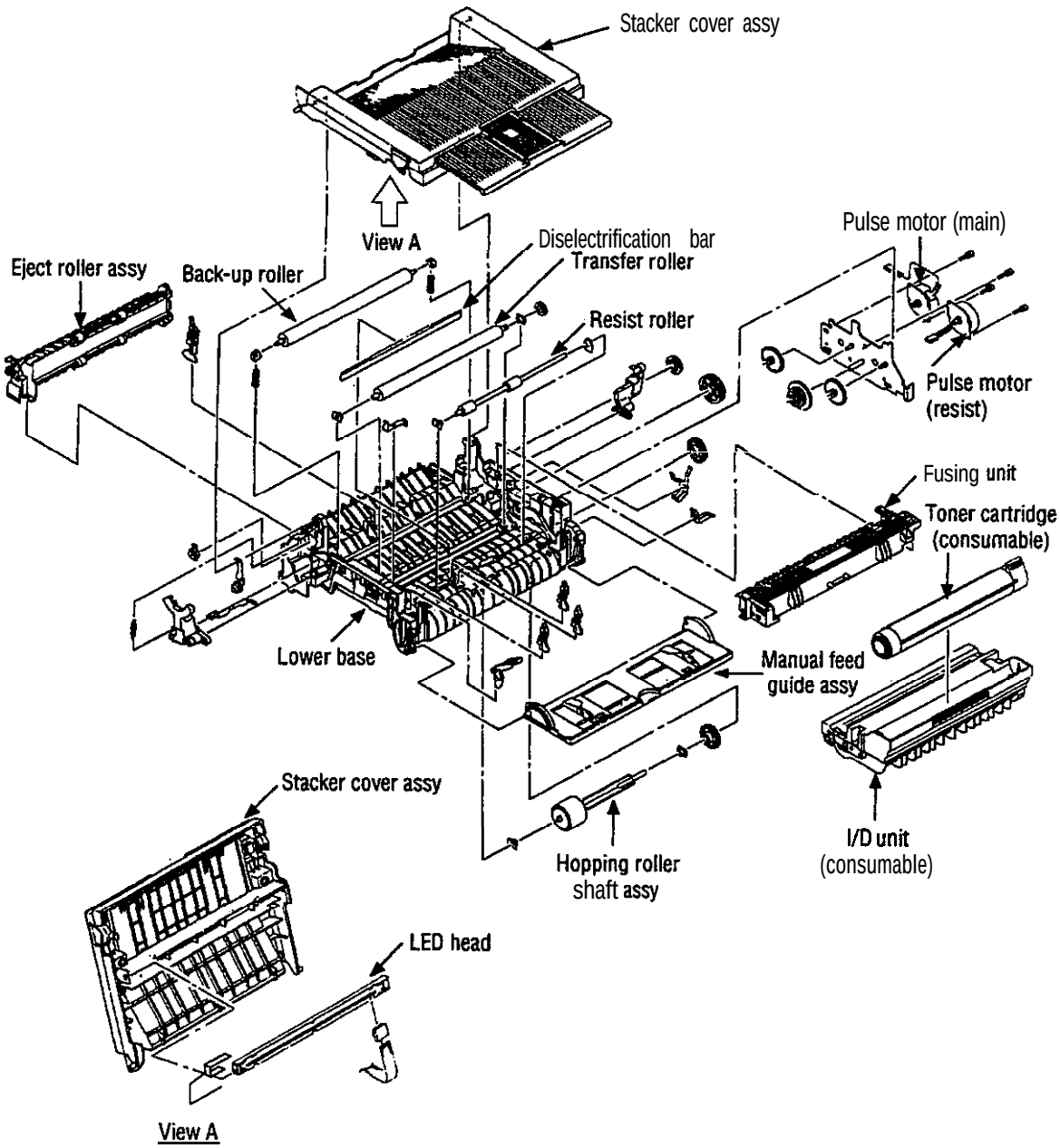


Figure 3-1

[Upper cover unit]

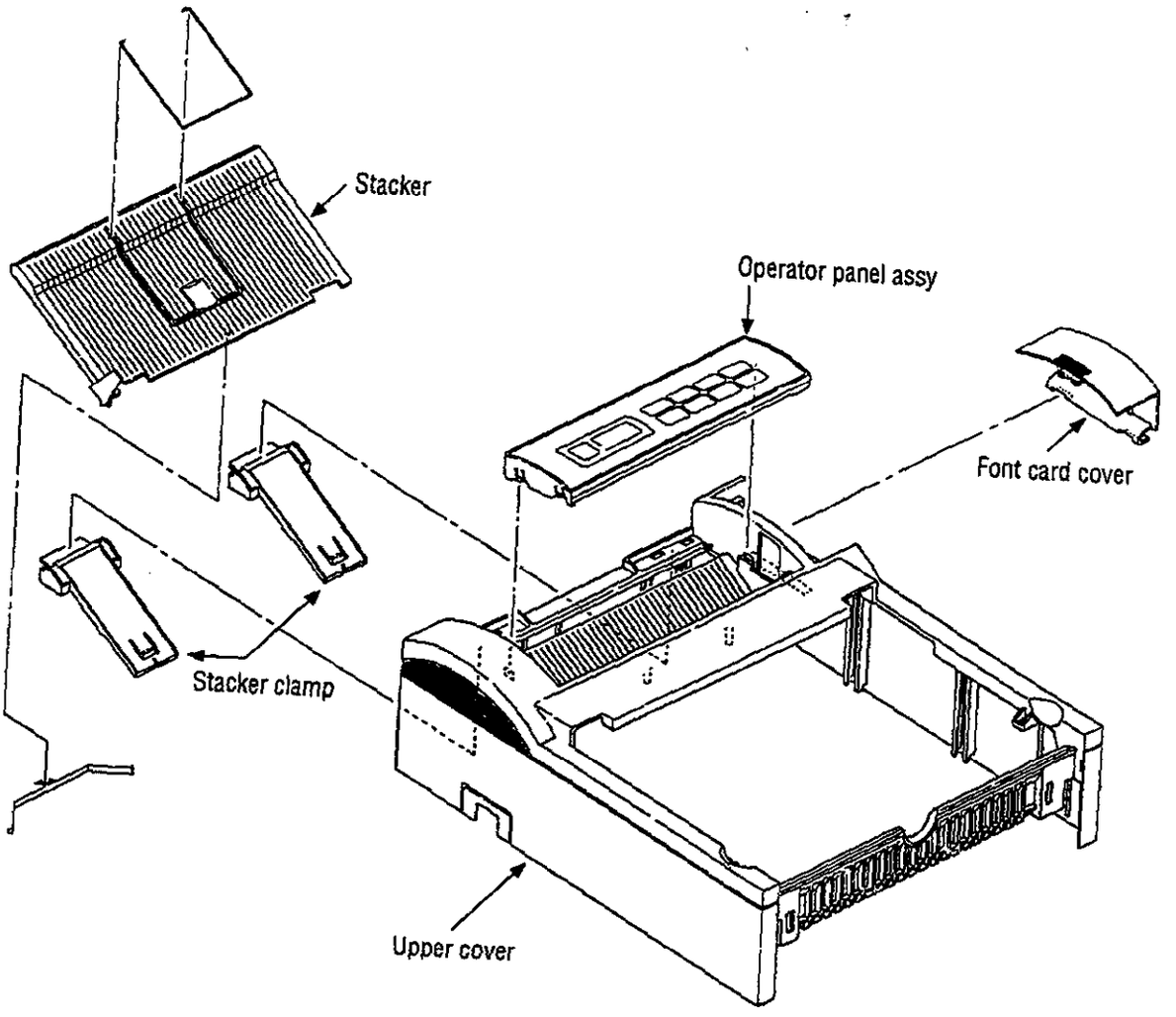


Figure 3-2

[Base unit]

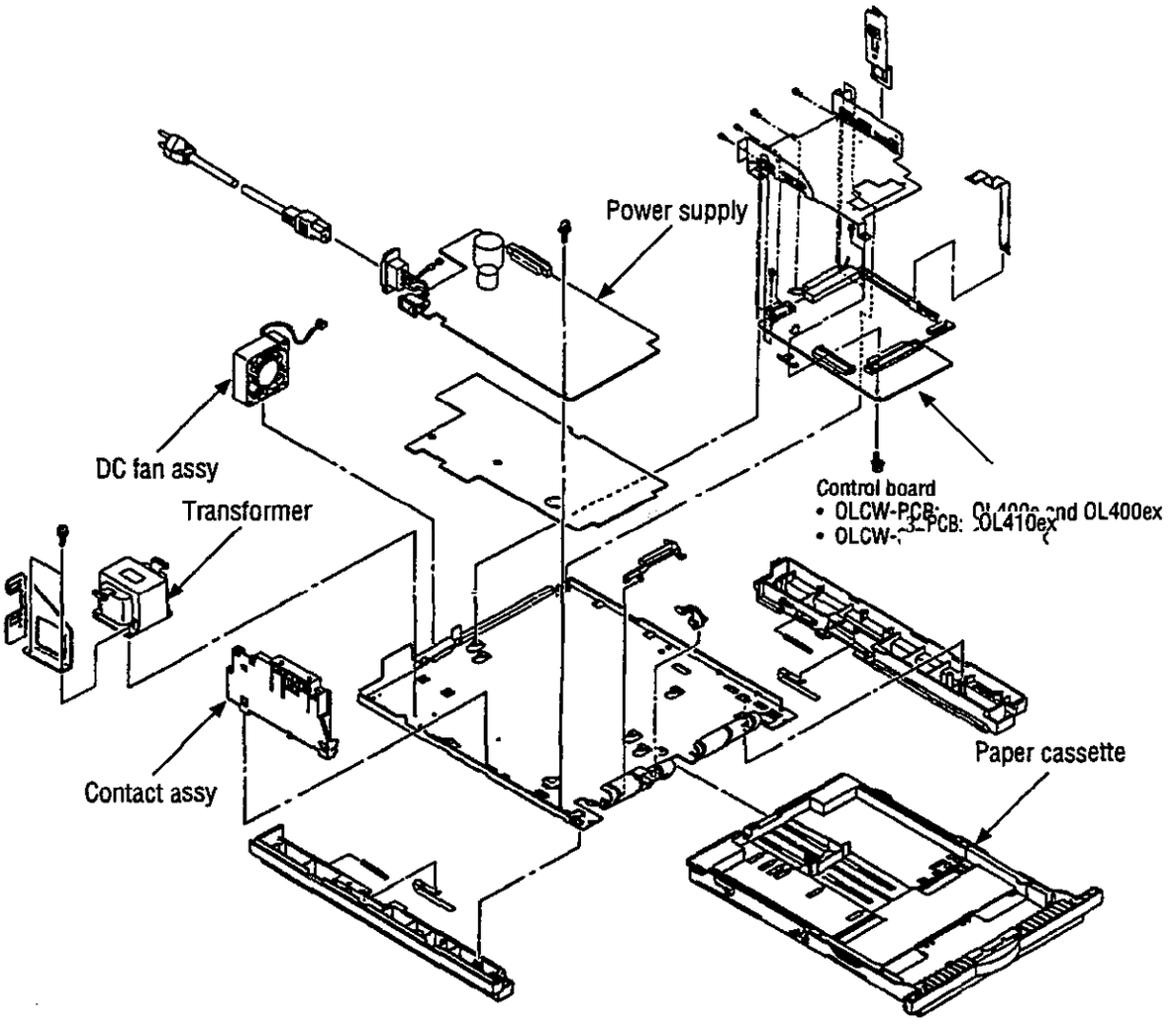
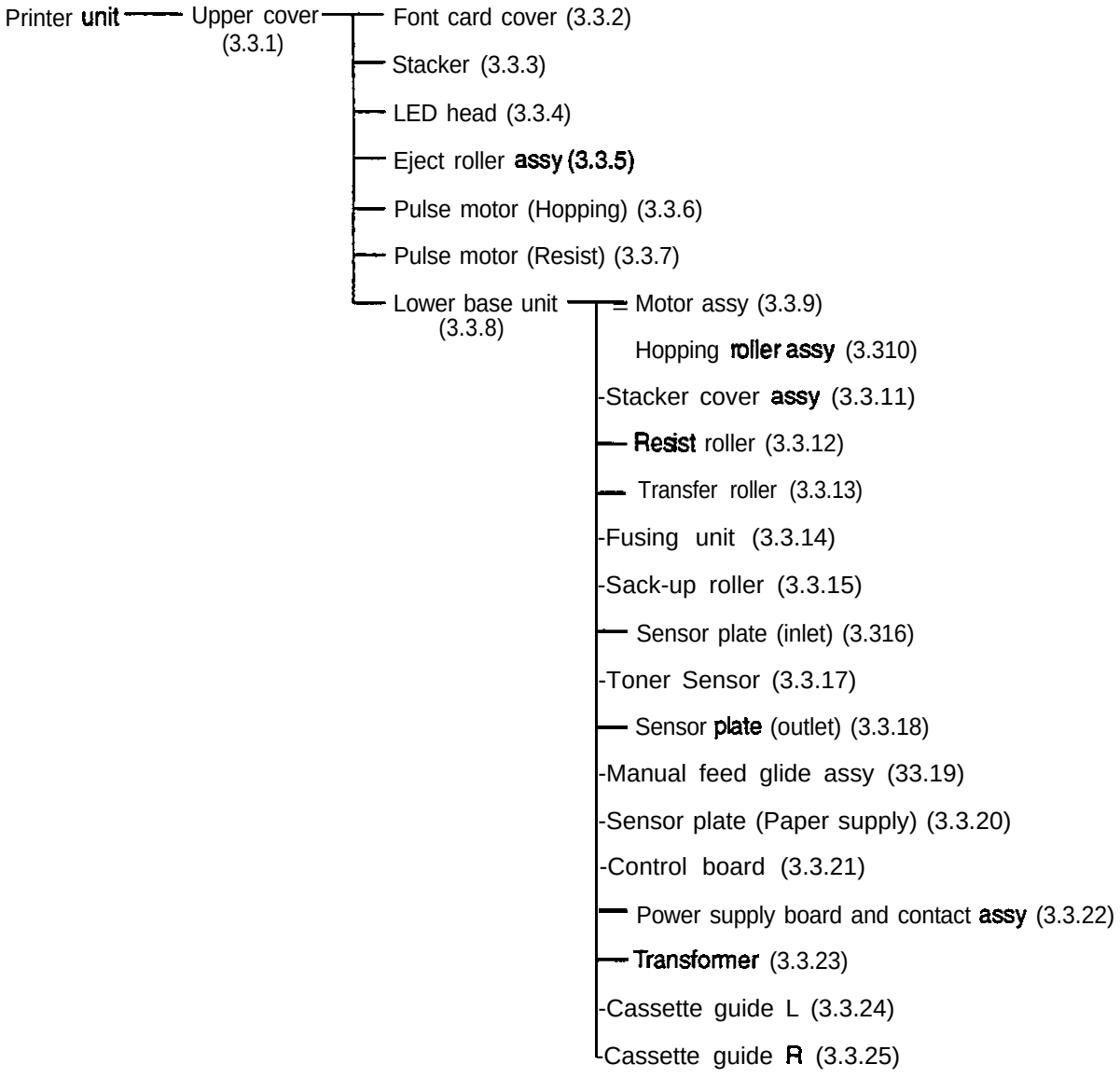


Figure 3-3

3.3 How to Change Parts

This section explains how to change parts and assemblies listed in the disassembly diagram below.

In the parts replacement procedure, those parts marked with the part number inside ● with white letters are RSPL parts.



3.3.1 Upper Cover

(1) With the power switch turned off, unplug the AC power cord from the outlet.

(2) Disconnect the interface cable ①.

(3) Open the font card cover ❷, and remove the font card (option) ③.

(4) Lift the left side of the operator panel assy ❹ and remove it.

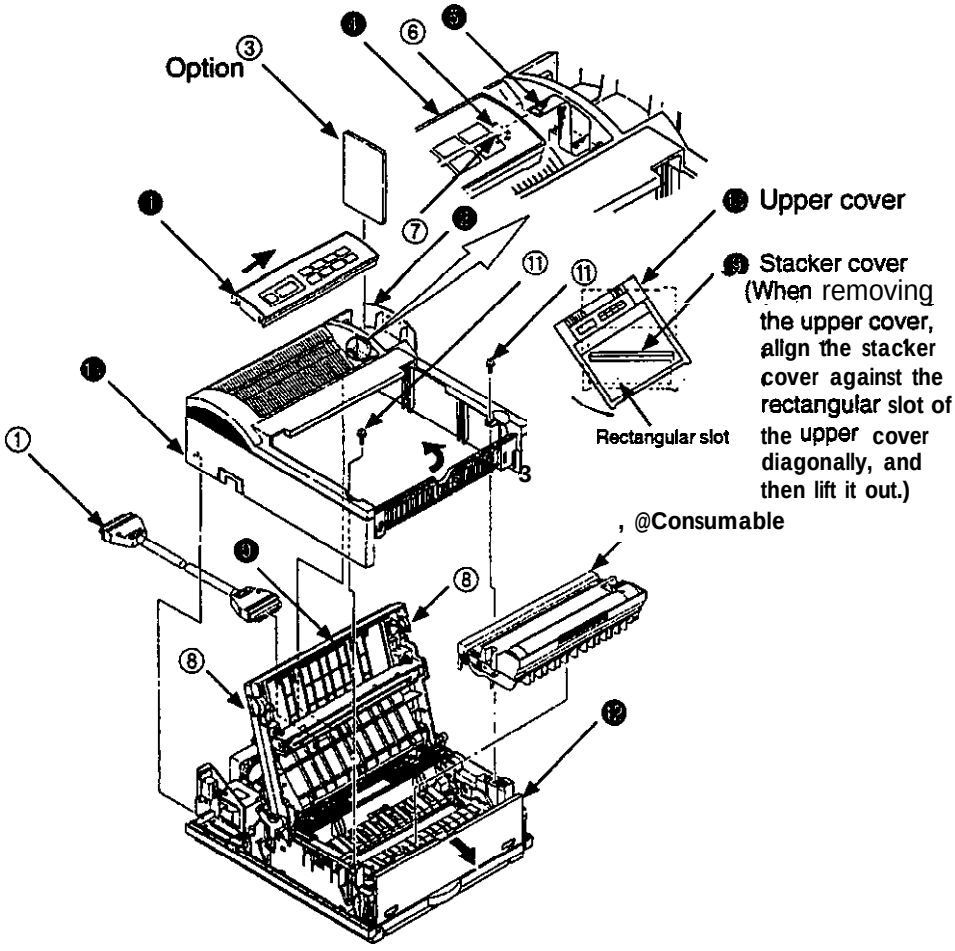
(5) Disconnect the connecting cable ❺ from the connector (CN1) ⑦ of the operator panel PCB ⑥, and put the cable inside the cover.

(6) Open the stacker cover assy ❾ by pressing the knobs ⑧ on the left and right sides.

(7) Remove the image drum unit ❿.

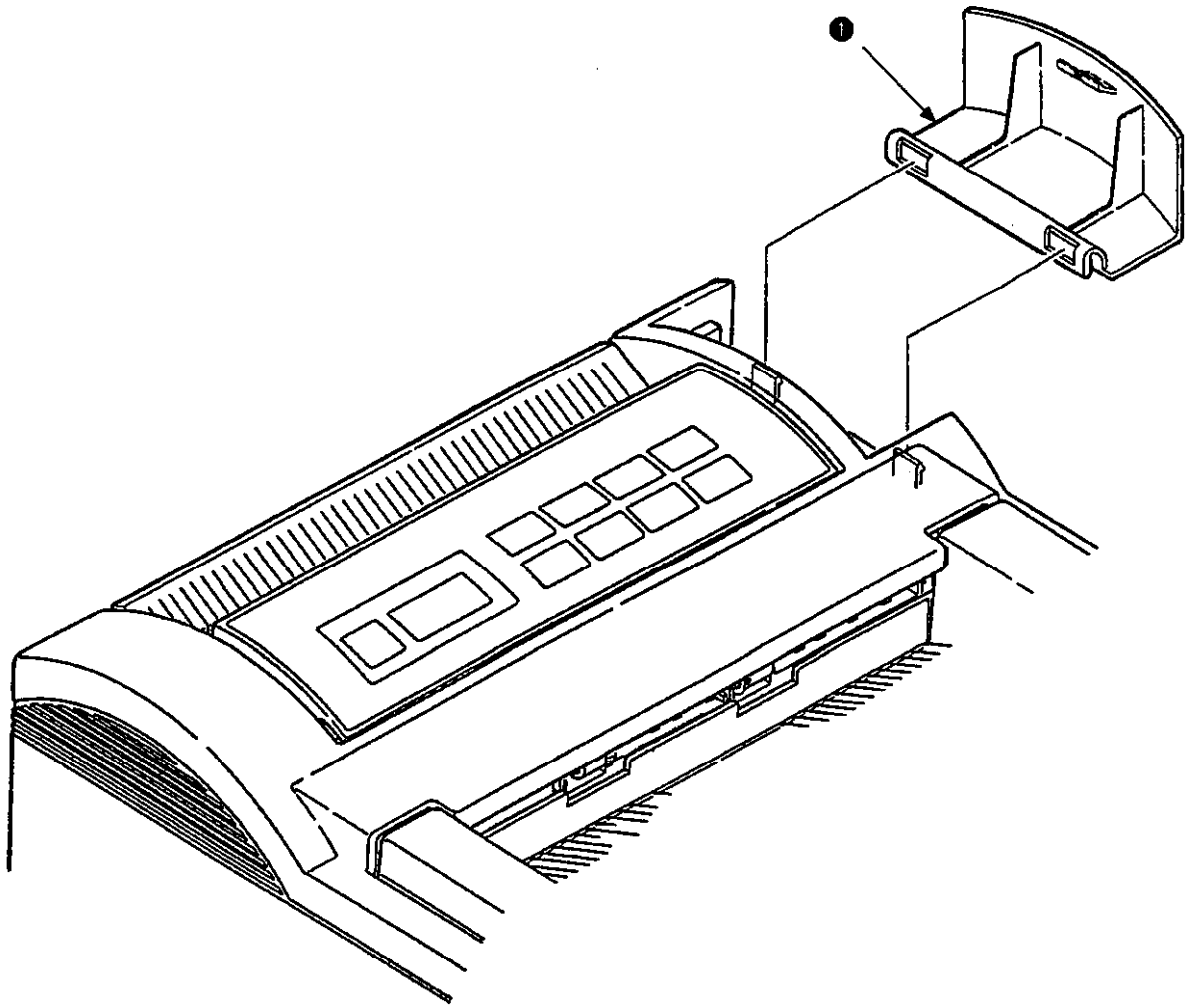
(3) Remove two screws ⑪, and open the manual feed guide assy ⓬. Lift this side of the upper cover ❶ up and release the claws at two locations on the back side. Align the stacker cover ❾ against the diagonal line of the square holes of the upper cover and lift up the upper cover ❶ slightly. then remove it.

Note: When removing or installing the upper cover, be careful not to damage the cable ⑤.


Option ③
❶ Upper cover
❾ Stacker cover
(When removing the upper cover, align the stacker cover against the rectangular slot of the upper cover diagonally, and then lift it out.)
Rectangular slot
, @Consumable

3.3.2 Font Card Cover

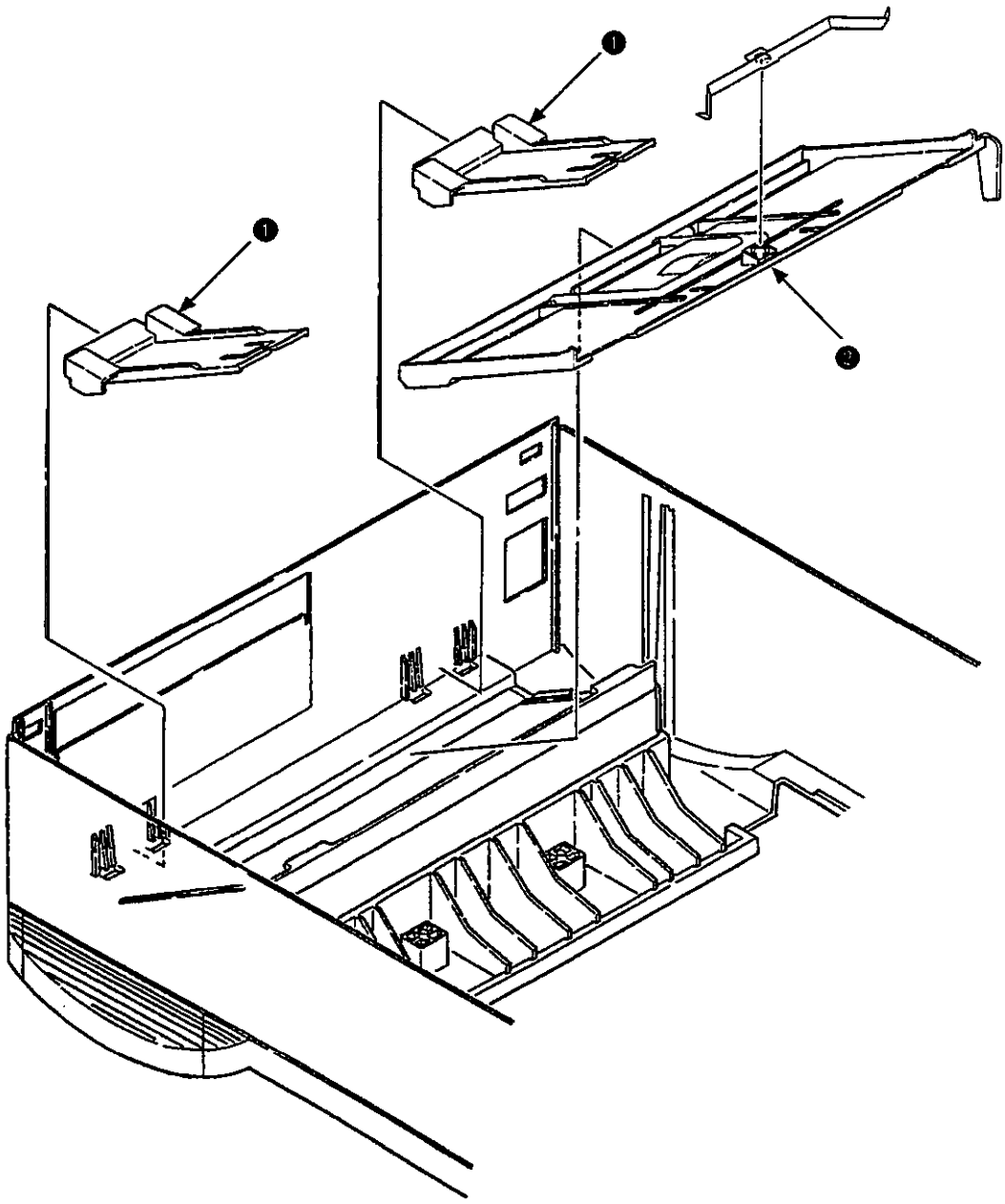
(1) Open the font card cover ❶ and remove it,



3.3.3 Stacker

(1) Remove the upper cover. (See 3.3.1)

(2) Remove two stacker clamps ❶ and the stacker ❷ by bending the upper cover.



3.3.4 LED Head

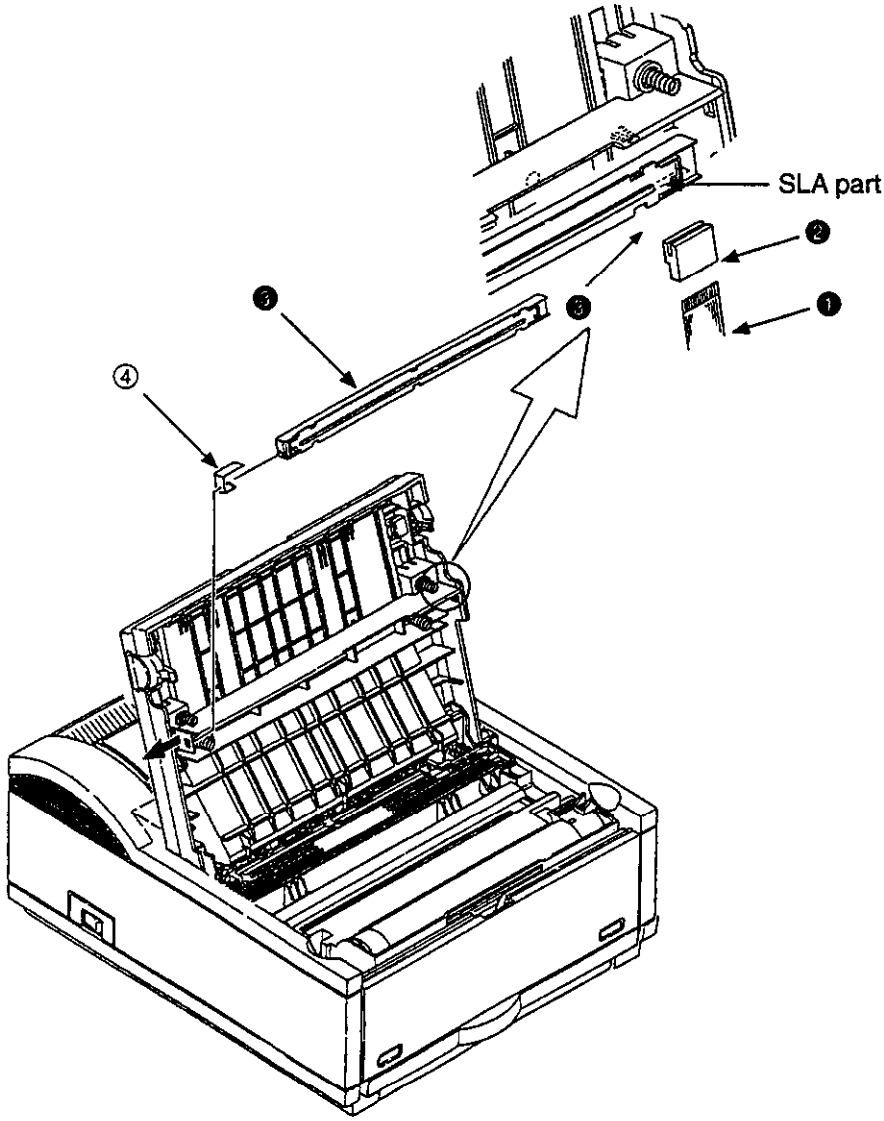
(1) Open the stacker cover.

(2) Remove the LED cable ❶ from the PC connector ❷ of the LED head ❸.

(3) Lay down the hook section on the left side of the stacker cover and remove LED head ❸.

Note:

- Se sure not to directly touch or push the SLA part of the LED head.
- After mounting the new LED head, set drive time of the LED head according to the marking on the LED head (see 4.2.1).
- For the installation of the LED cable ❶, install the PC connector ❷ to the LED cable ❶ first, then connect the LED head ❸ to the PC connector.
- When installing a new LED head, be careful not to lose the contact (LED) ④.

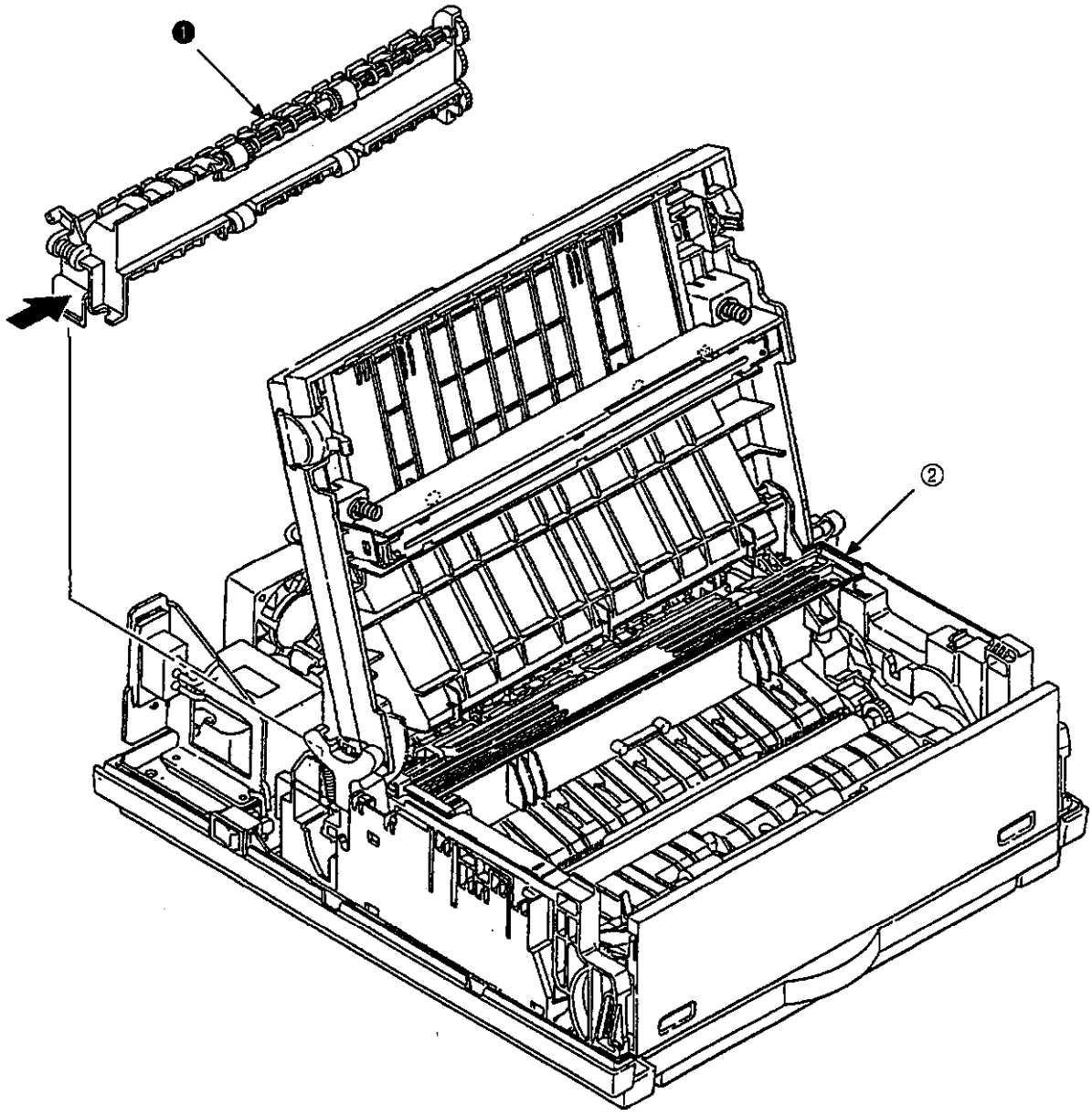


3.3.5 Eject Roller Assy

(1) Remove the upper cover (see 3.3.1).

(2) Press the clamp on the left side of the eject roller assy ❶ in the direction of the arrow. Detach the eject roller assy from the lower base unit ②, and remove it.

Note: When installing the eject roller, verify the proper engagement with the main unit.

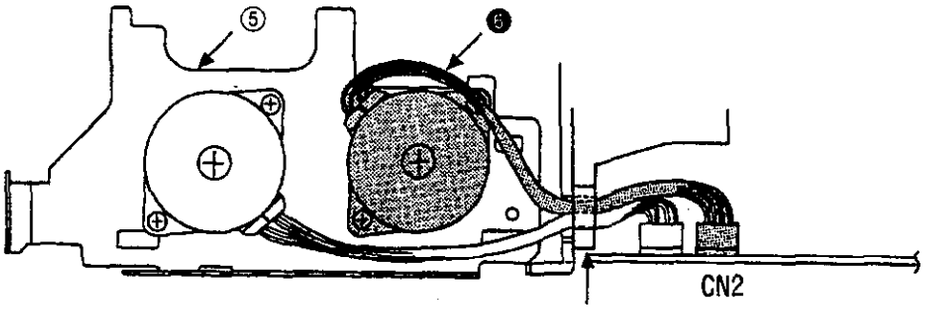


3.3.6 Pulse Motor (Main)

(1) Remove the upper cover (see 3.3.1).

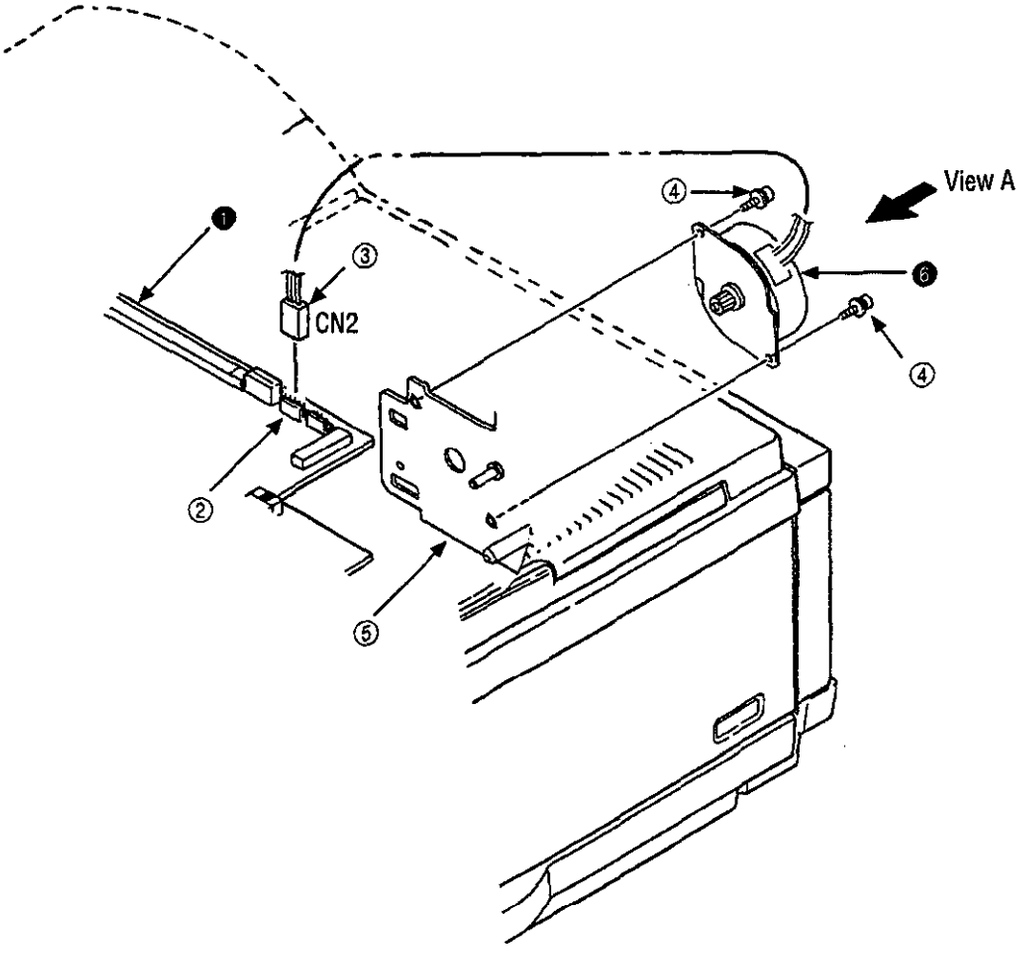
(2) Remove the connector ③ from the connector (CN2) ② of the control board ❶.

(3) Remove two screws ④ and remove the pulse motor (main) ❻ from the motor bracket ⑤.



View A

Bring two cables through the cable guide.

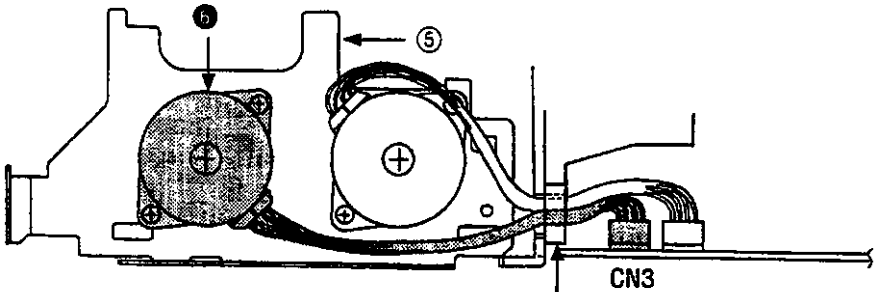


3.3.7 Pulse Motor (Resist)

(1) Remove the upper cover (see 3.3.1).

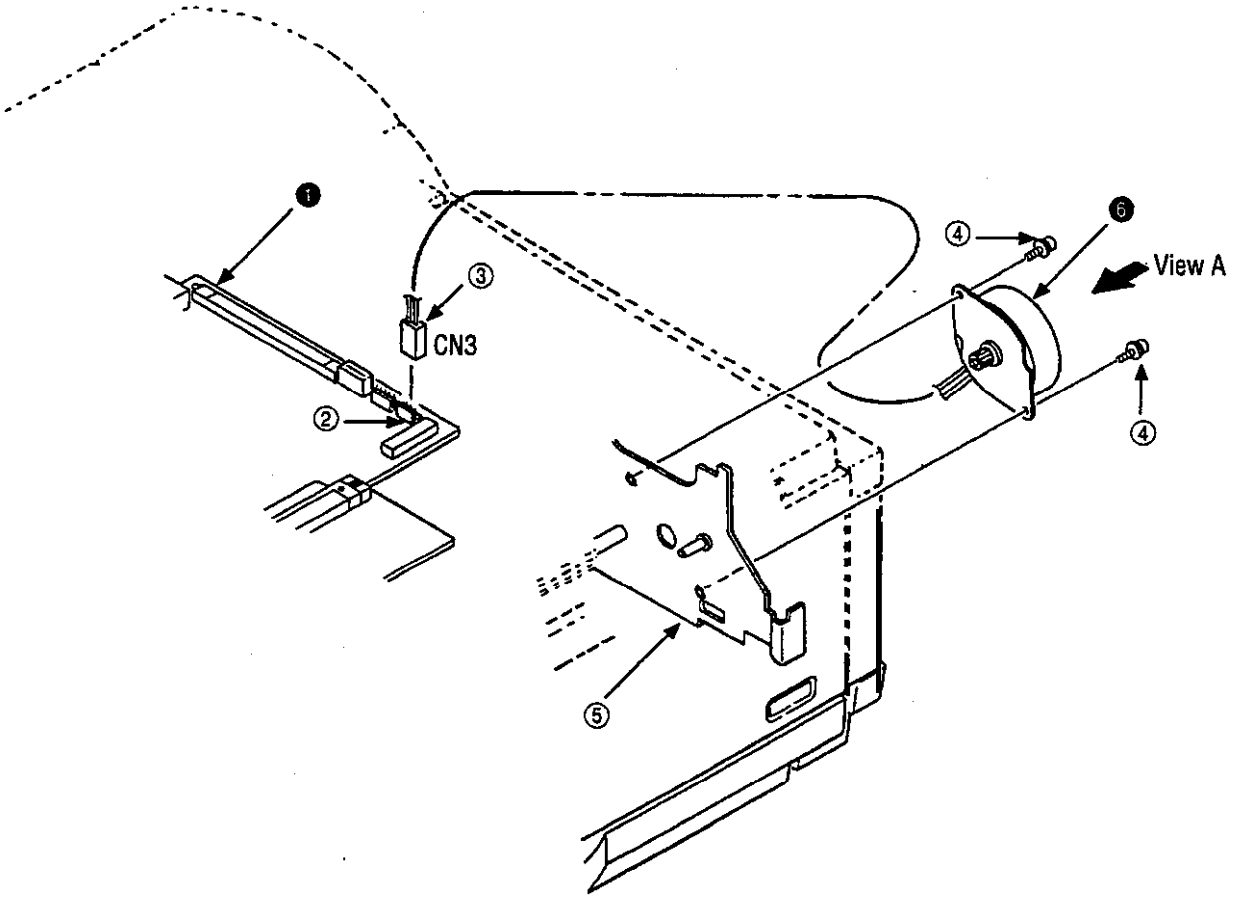
(2) Remove the connector ③ from the connector (CN3) ② of the control board ❶.

(3) Remove two screws ④ and remove the **pluse** motor (resist) ❻ from the motor bracket ⑤.



View A

Bring two cables through the cable guide.



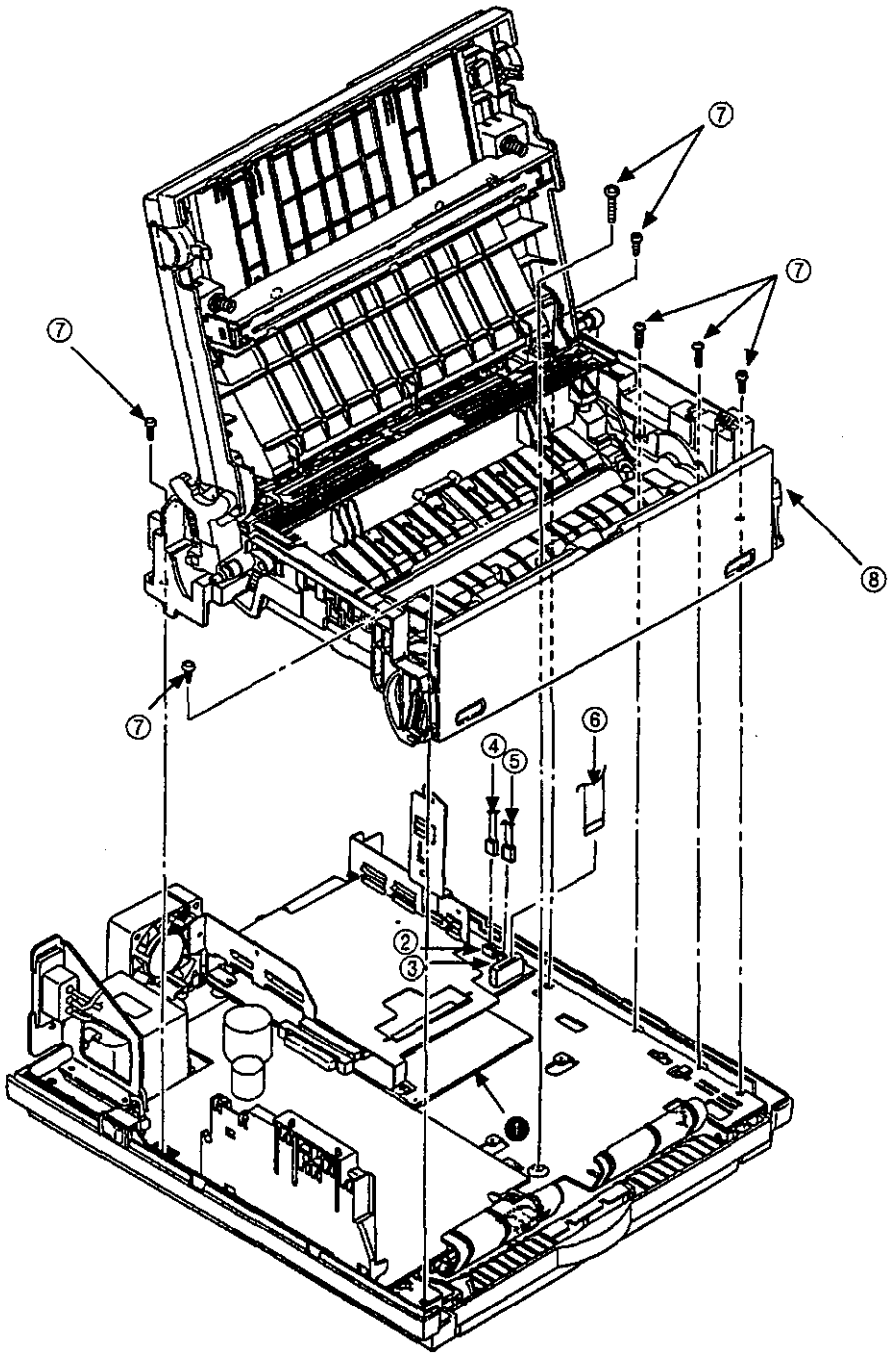
3.3.8 Lower Base Unit

(1) Remove the upper cover (see 3.3.1).

(2) Remove the connecting cables ④ and ⑤ of the pulse motor from the connectors ② and ③ of the control board ❶.

(3) Remove the connector ⑥ of the LED head.

(4) Remove seven screws ⑦, then remove the lower base unit ⑧.

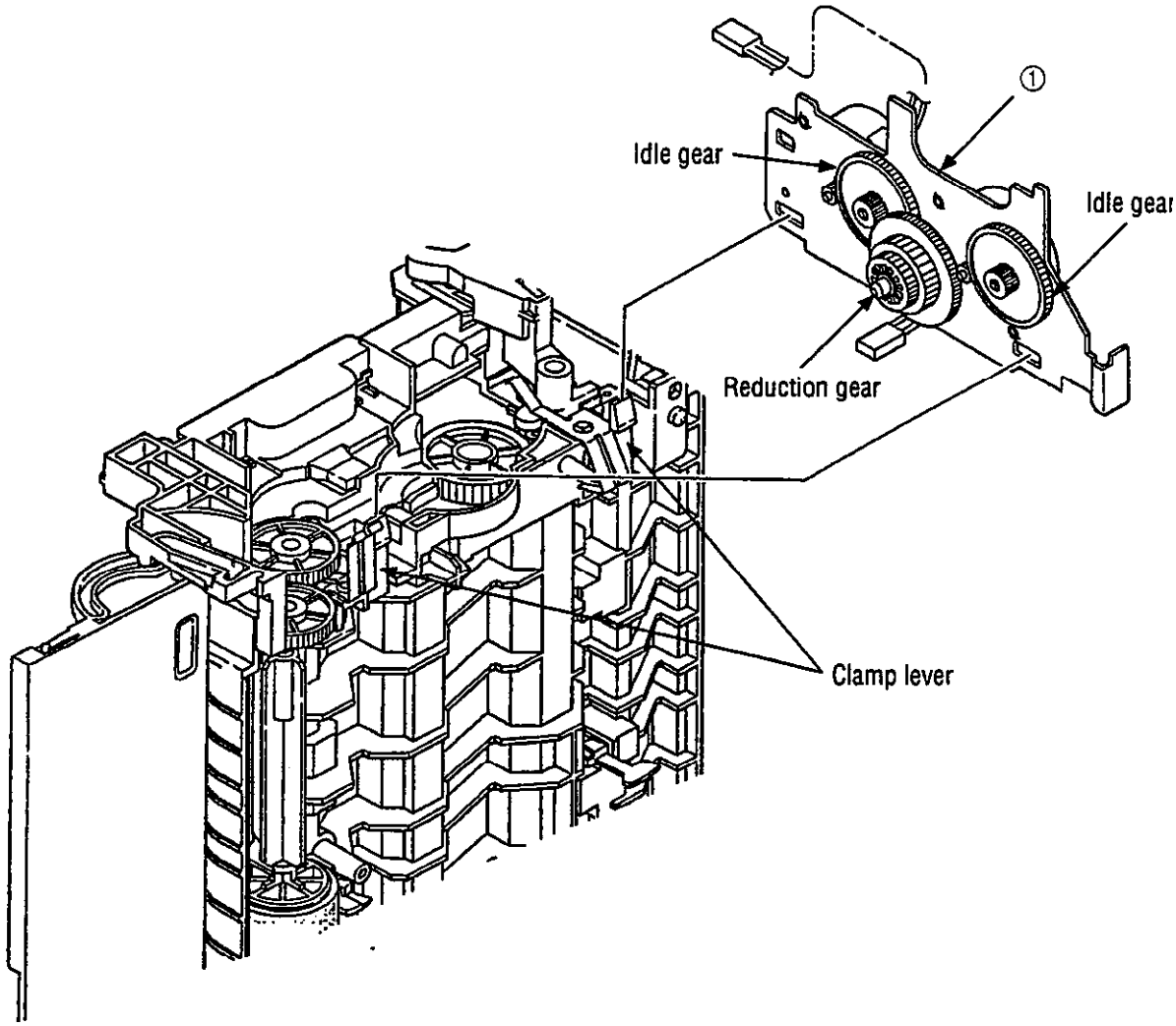


3.3.9 Motor Assy

(1) Remove the upper cover (see 3.3.1).

(2) Remove the lower base unit (see 3.3.8).

(3) Stand the lower base unit on its side as shown, and unlock two clamp levers, then remove the motor assy ①.



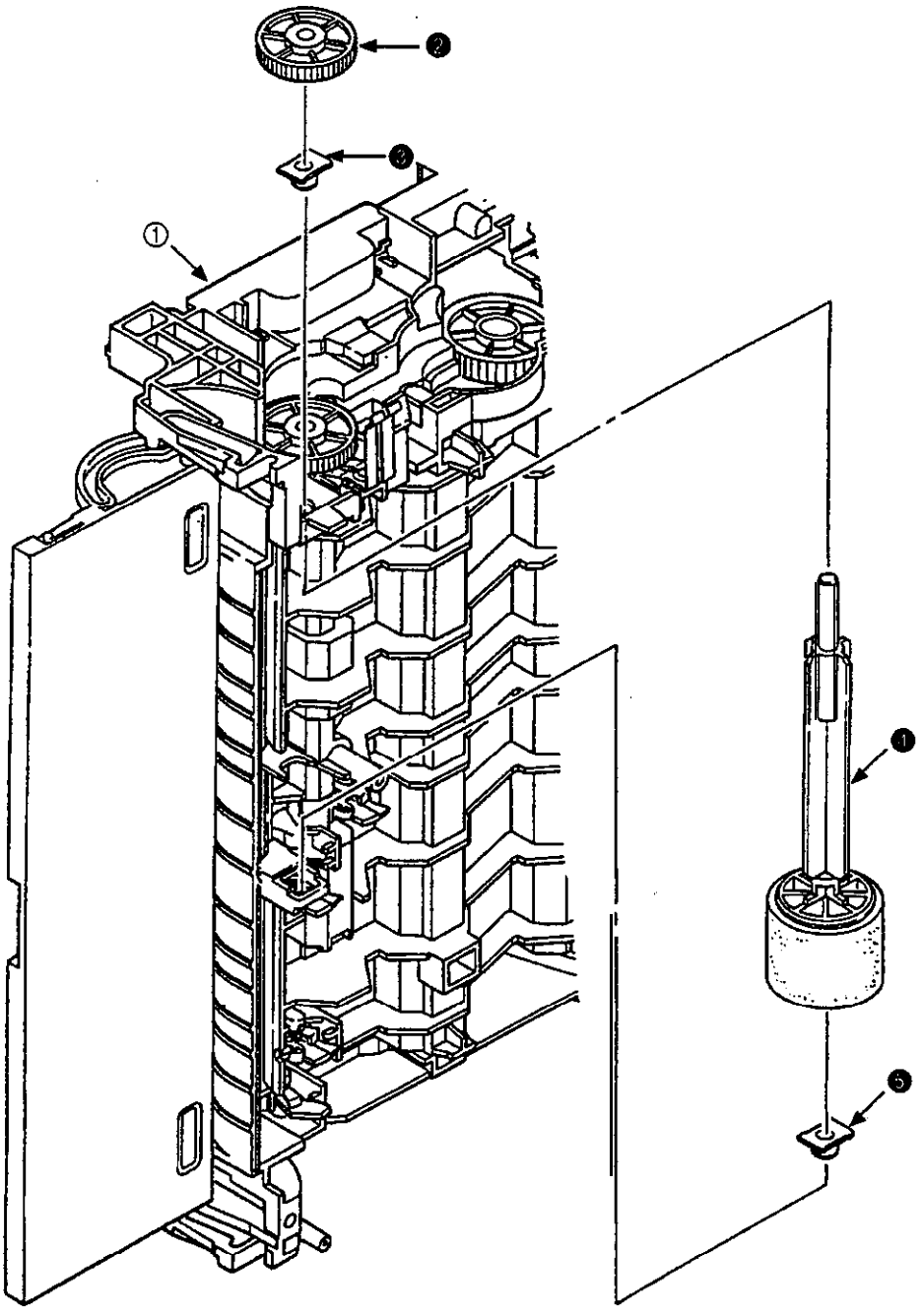
3.3.10 Hopping Roller Assy

(1) Remove the upper cover (see 3.3.1).

(2) Remove the lower base unit (see 3.3.8).

(3) Remove the motor assy (see 3.3.9).

(4) With the lower base unit ① standing on its side, remove the one-way clutch gear ❷ and the bearing (A) ❸, then remove the hopping roller assy ❶ and the bearing (B) ❺.



3.3.11 Stacker cover assy

(1) Remove the upper cover. (See 3.3.1)

(2) Remove the motor assy. (See 3.3.9)

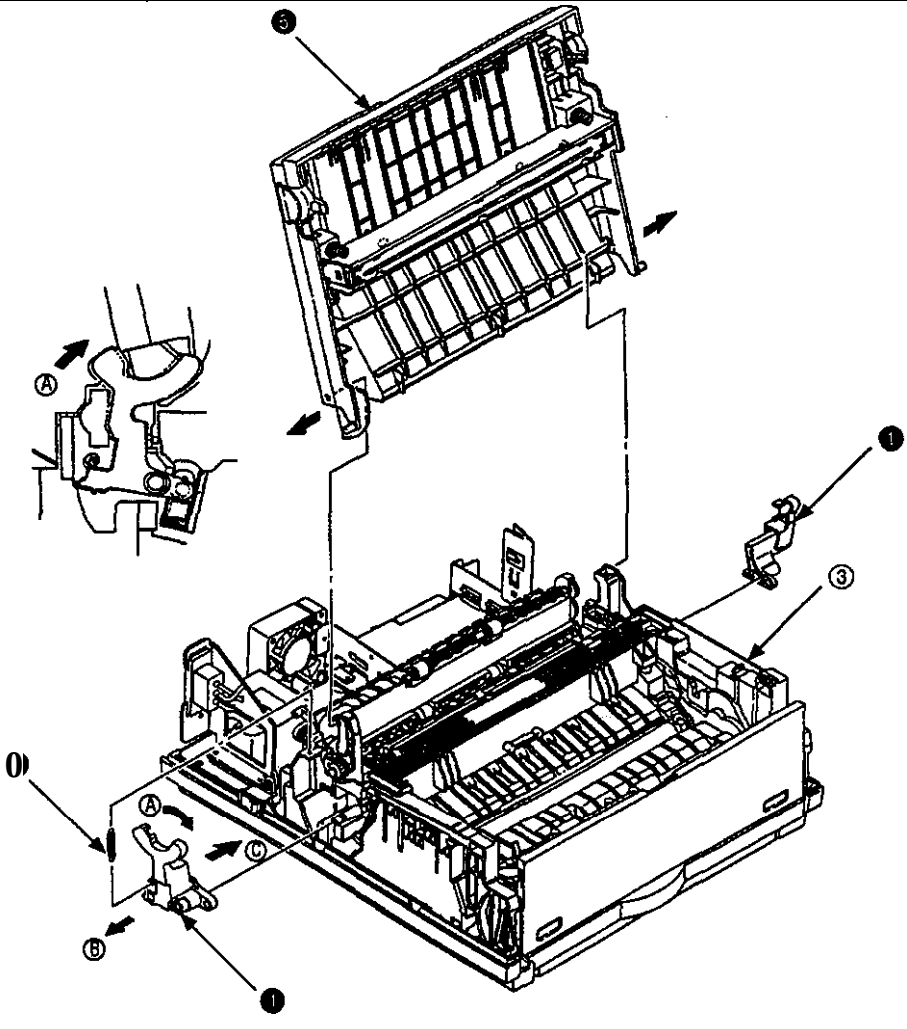
(3) Remove the reset lever R ❶.

(4) Detach the reset spring ❷ from the lower base unit ③, turn the reset level L ❶ in the direction of the arrow Ⓐ until it is stopped, and remove it in the direction of the arrow@.

(5) Release two claws of the lower base unit ③, then remove the stacker cover assy ❺.

Note: The reset lever L and R are different for the printers with serial numbers up to and including SIN 303Axxxxx and those with S/N 304Axxxxx and thereafter. When exchanging the reset lever L or R, be sure to use the ones suitable for the serial number of the printer.

Parts name	Use for Product	
	OL400e through S/N 303Axxxxx	OL400e from S/N 304Axxxxx, OL400ex and OL410ex
Reset lever L	P/N 3PK4083-6810P1	P/N 3PP4083-6053P1
Reset lever R	P/N 3PK4083-6811P1	PIN 3PP4083-6054P1



3.3.12 Resist Roller

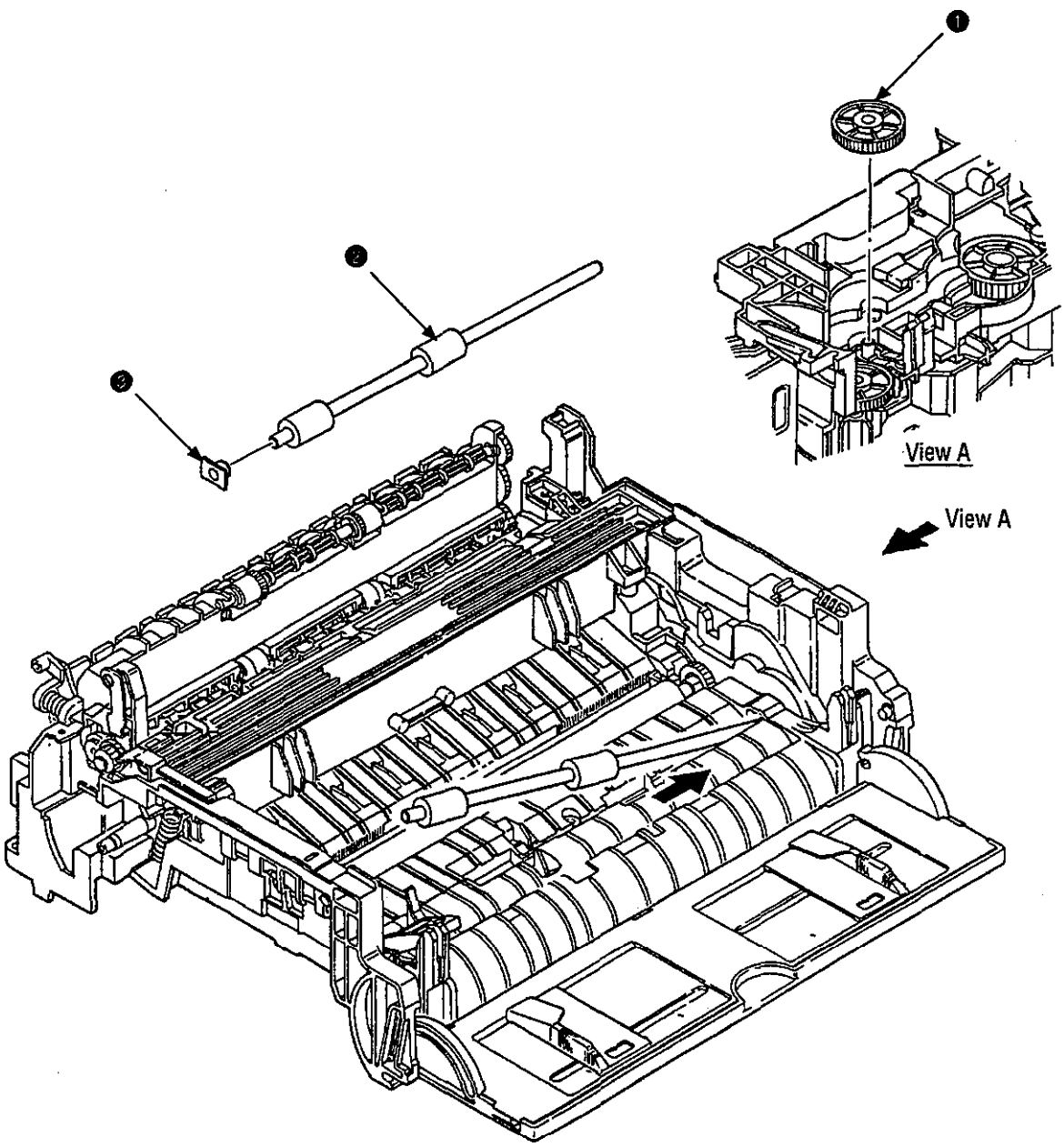
(1) Remove the upper cover (see 3.3.1).

(2) Remove the lower base unit (see 3.3.8).

(3) Remove the motor assy (see 3.3.9).

(4) With the lower base unit standing on its side, remove the one-way clutch gear ❶.

(5) Press the resist roller ❷ to the right side (to the direction shown by arrow) and lift up the left side of it, then remove the resist roller ❷ and the bearing (resist) ❸.



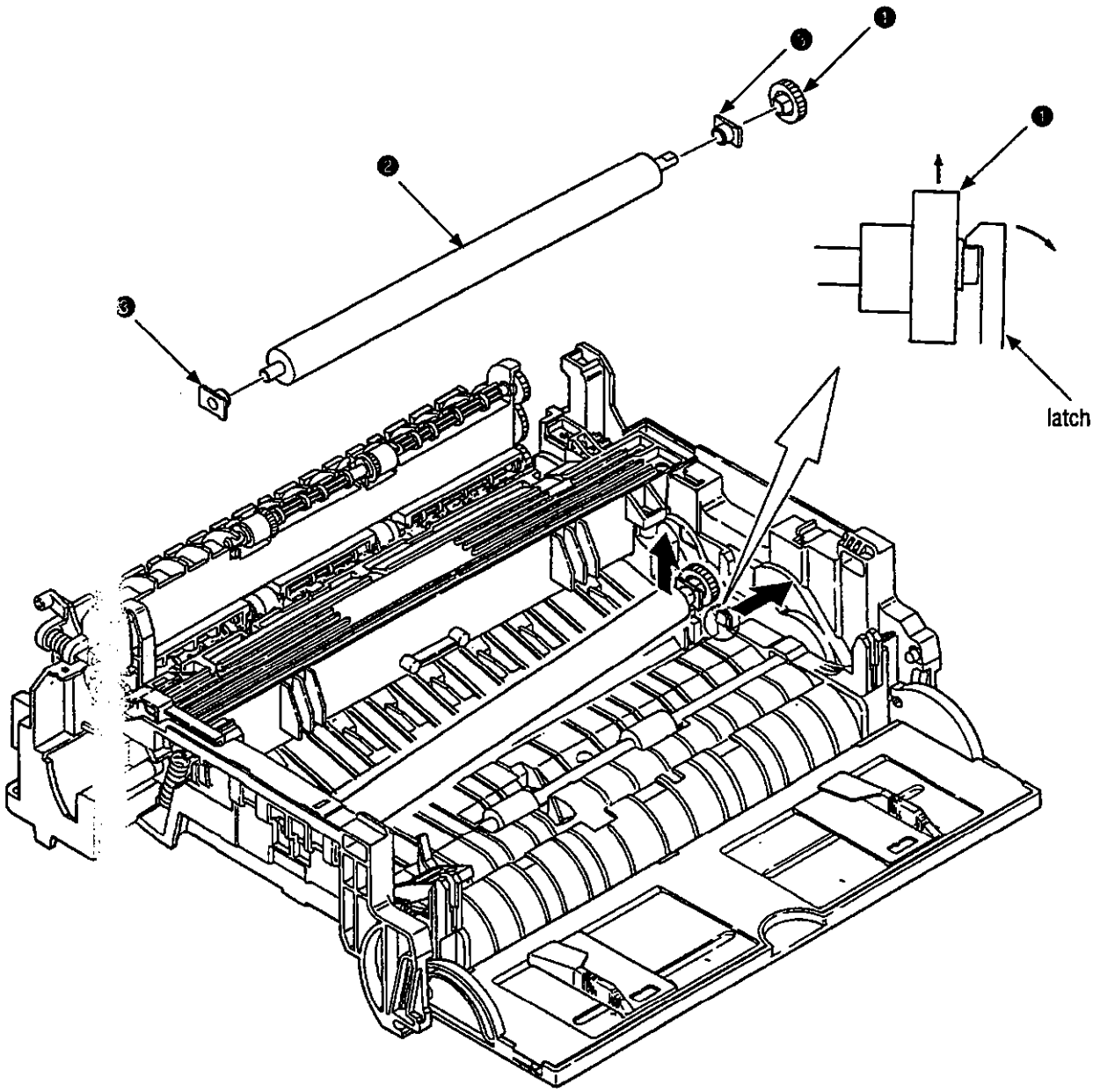
33.13 Transfer Roller

(1) With the power switch turned off, unplug the AC power cord from the outlet.

(2) Open the stacker cover.

(3) Release TR gear ❶ by unlocking the latch of the main unit (never apply an excessive force when unlocking the latch).

(4) Lift the right side of the transfer roller ❷, and shift it to the right side, then pull it out from the main unit (at this time, the bearings ❸ of the left and right sides of the transfer roller ❷ will release themselves).



3.3.14 Fusing Unit

(1) Remove the upper cover (see 3.3.1).

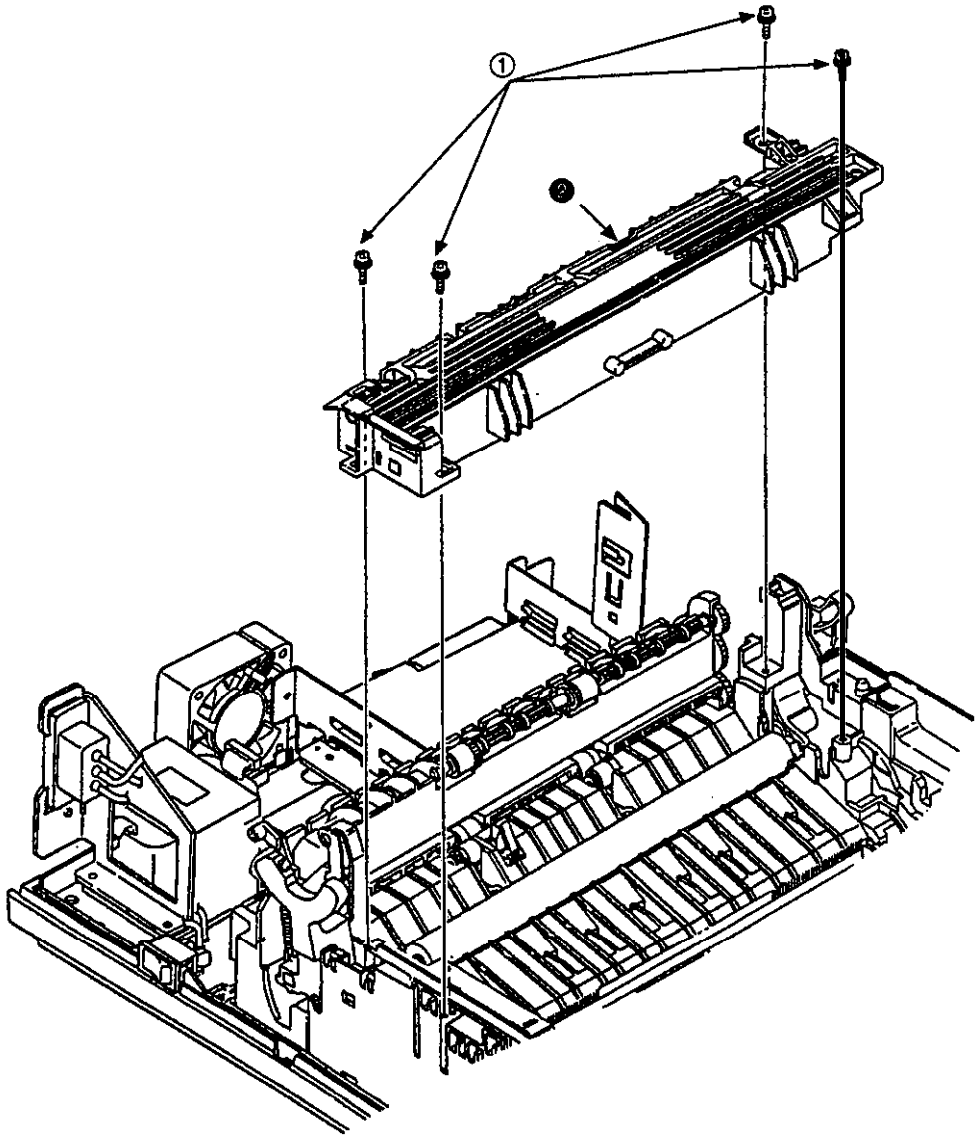
(2) Remove the lower base unit (see 3.3.8).

(3) Remove the stacker cover assy (see 3.3.11).

(4) Remove four screws ① and remove the fusing unit ❷.

Caution: Fusing unit may be hot. Use care when handling.

Note: When installing or removing the fusing unit, tighten or loosen the screws while holding the fusing unit down with your hand.



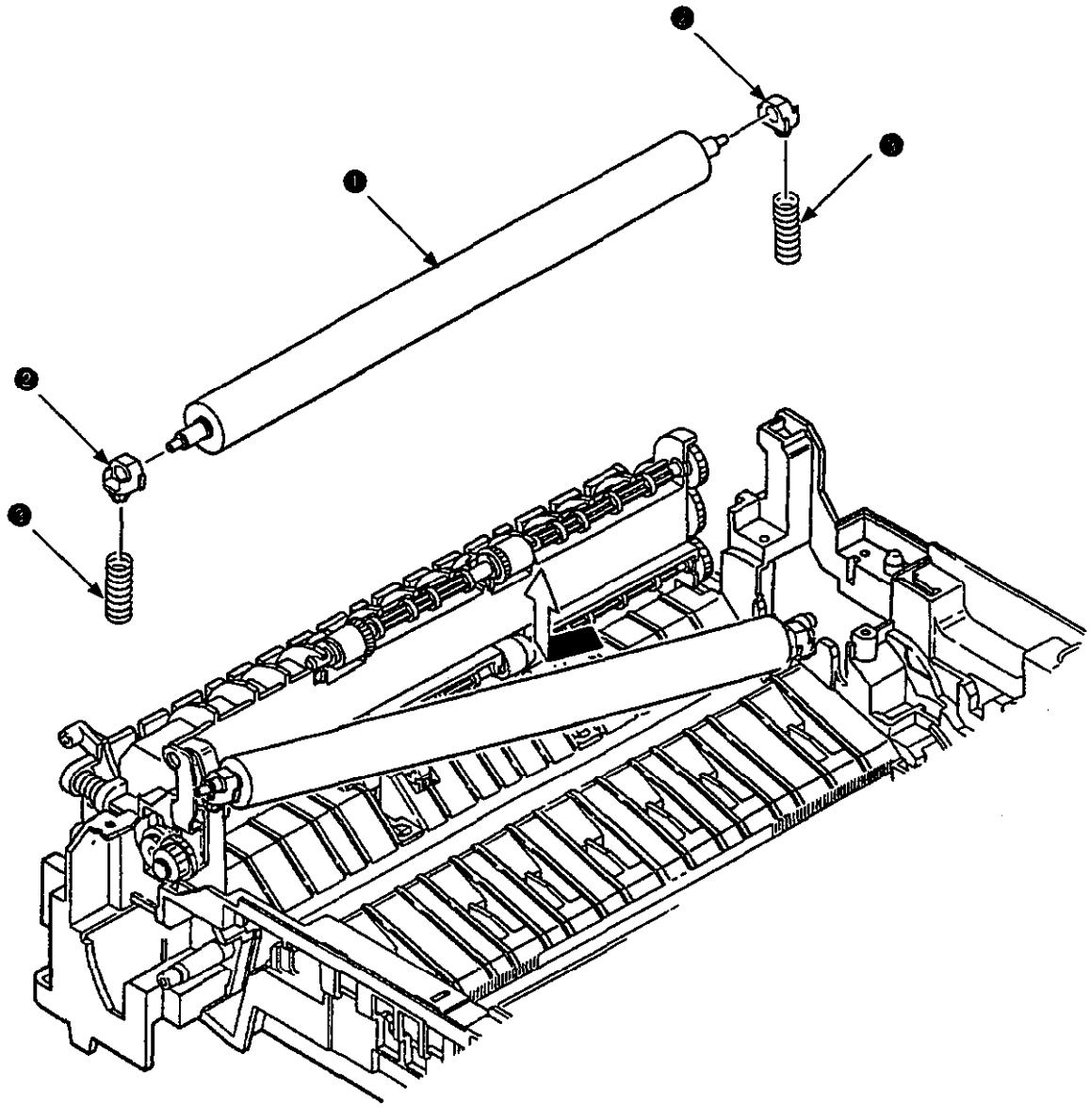
3.3.15 Back-up roller

(1) Remove the fusing unit assy. (See 3.3.14)

(2) Lift the left side of the back-up roller ❶ and pull it out to the left side. (At this time, two bushings ❷ and the bias spring ❸ will be released of themselves.)

Note: The back-up roller and bias spring are different for those printers with serial numbers up to and including S/N 303Axxxxx and those with serial numbers after S/N 304Axxxxx. When exchanging the back-up roller or bias spring, be sure to use the ones suitable for the serial number of the printer.

Parts name	Use for Product	
	OL400e through S/N 303Axxxxx	OL400e from S/N 304Axxxxx, OL400ex and OL41 Oex
Back-up roller	P/N 3PB4083-6050P1	P/N 3PB4083-6064P1
Bias spring	P/N 4PP4083-6051 PI	PIN 4PP4083-6065P1

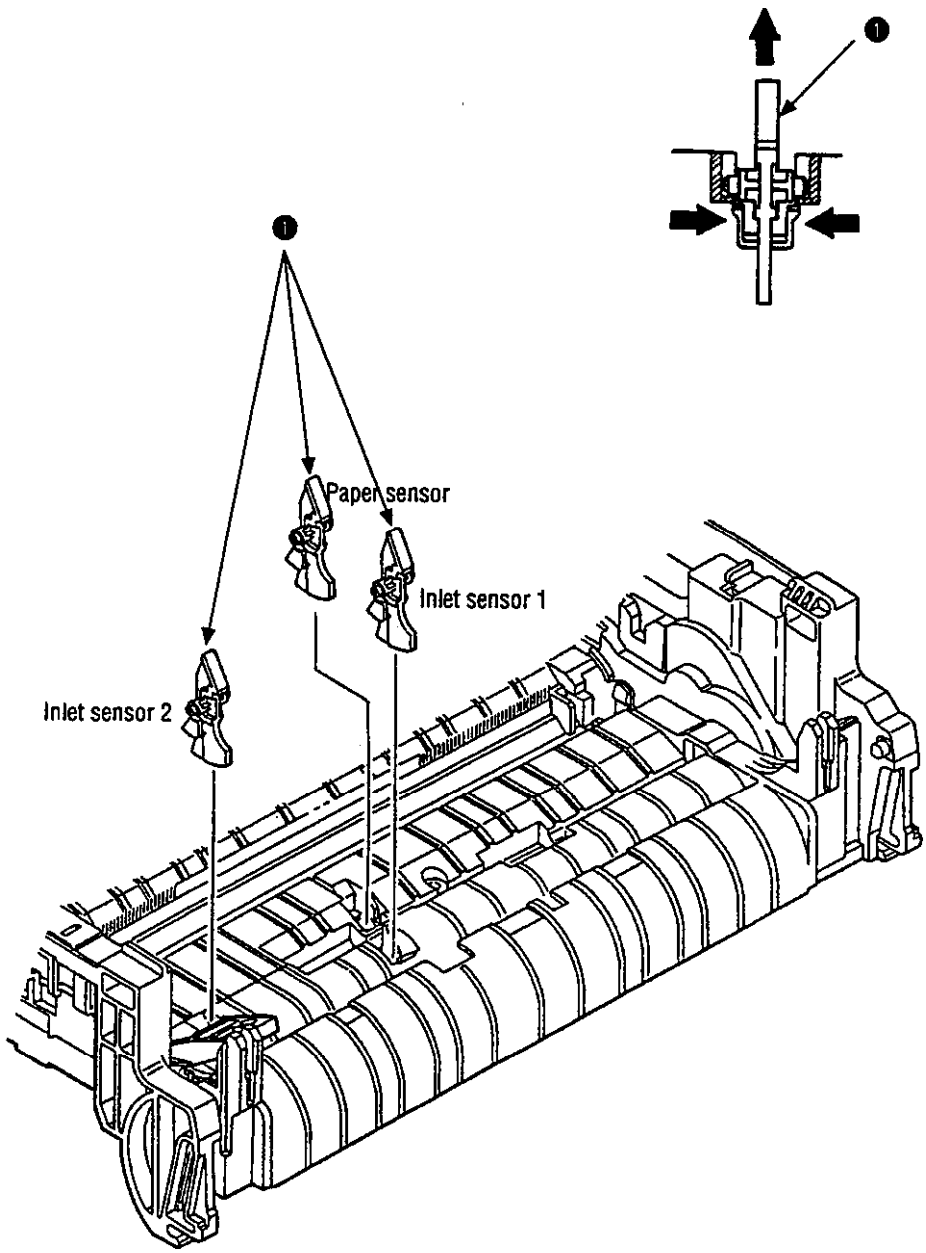


3.3.16 Sensor Plate (Inlet)

(1) Remove the upper cover (see 3.3.1).

(2) Remove the lower base unit (see 3.3.8).

(3) Press the clamps of three sensor plates (inlet) ❶, and remove the sensor plates by pressing them upward from the bottom side.

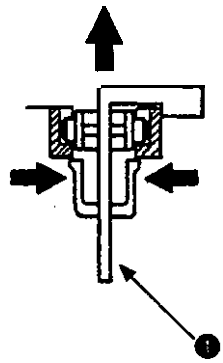


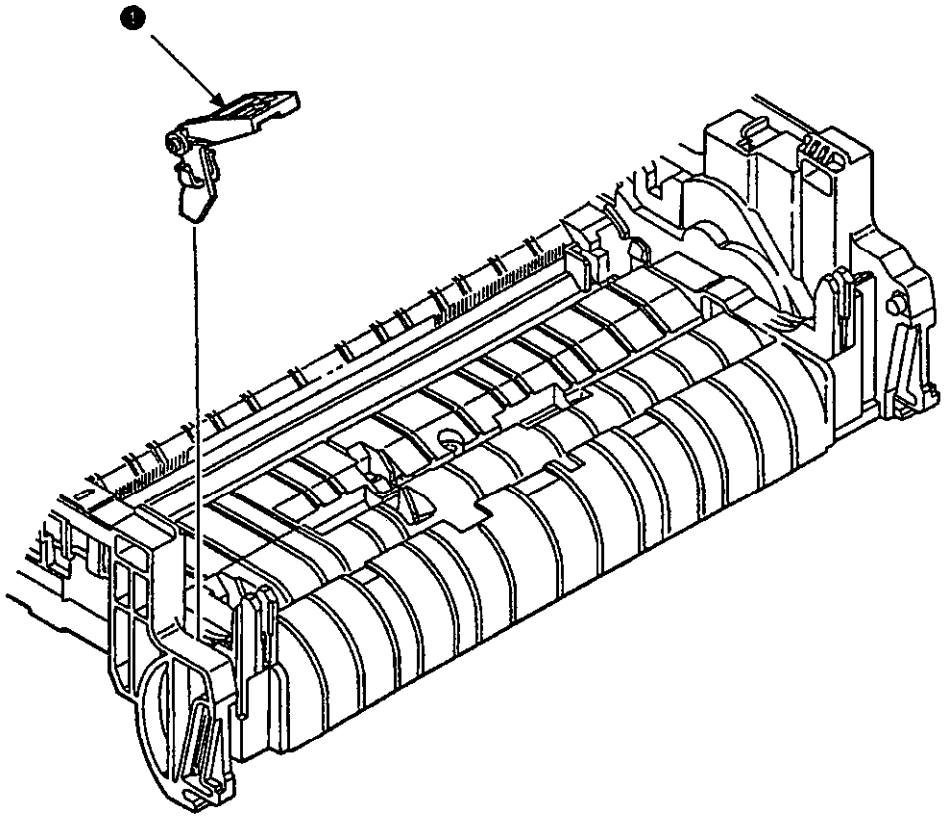
33.17 Toner Sensor (Adhesion)

(1) Remove the upper cover (see 3.3.1).

(2) Remove the lower base unit (see 3.3.8).

(3) Press the clamp of the toner sensor (adhesion) ❶, and remove the sensor by pushing it up.





3.3.18 Sensor Plate (Outlet)

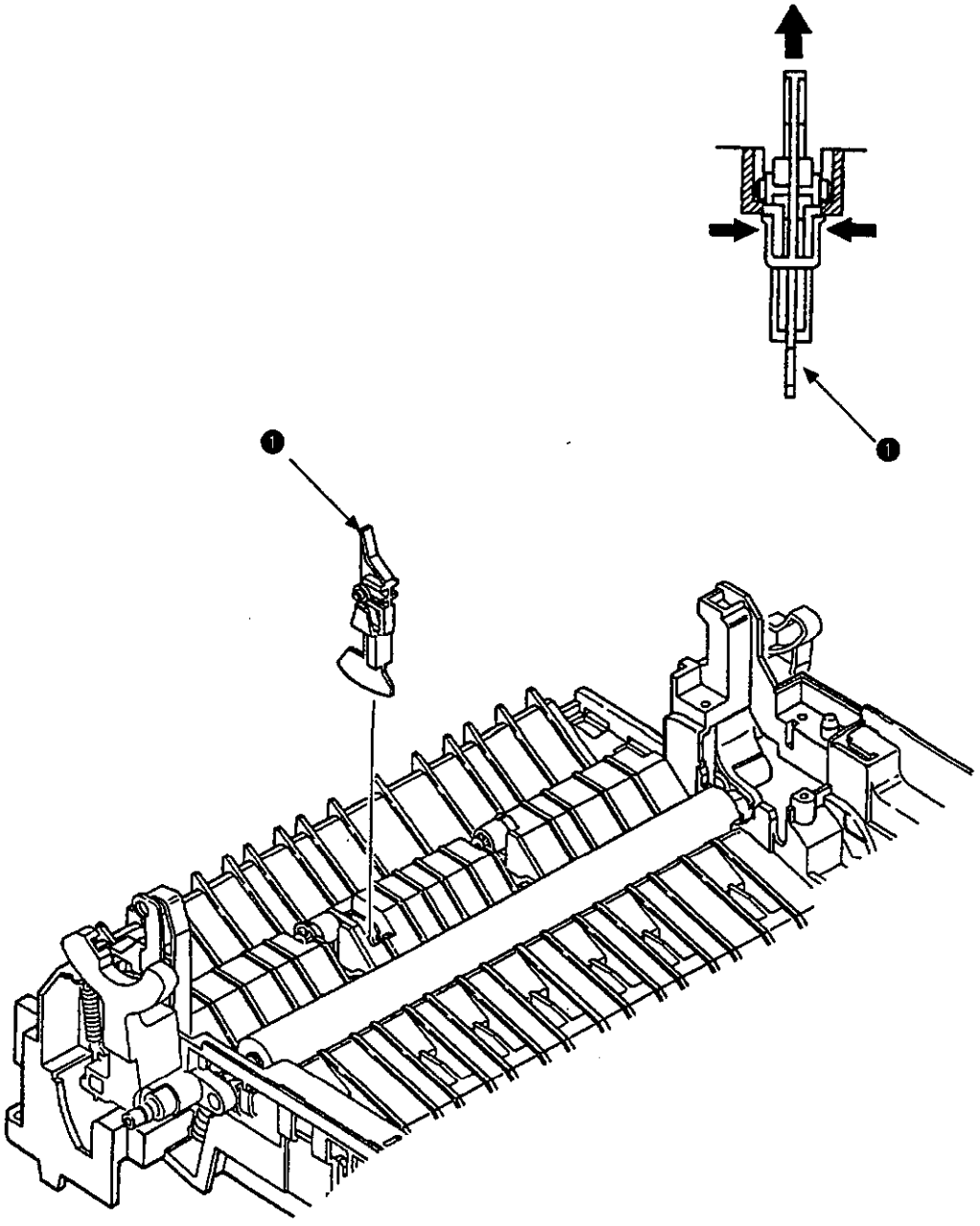
(1) Remove the upper cover (see 3.3.1).

(2) Remove the eject roller assy (see 3.3.5).

(3) Remove the lower base unit (see 3.3.8).

(4) Remove the fusing unit assy (see 3.3.14).

(5) Press the clamp of the sensor plates (outlet) ❶, and remove the sensor plate by pushing it up.

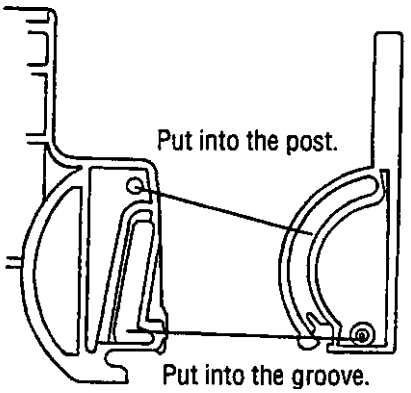


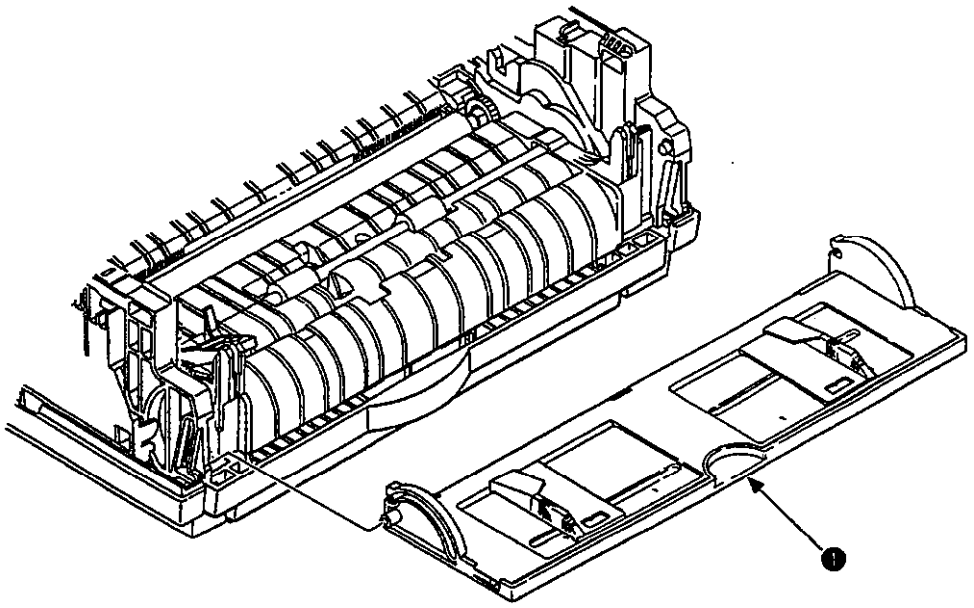
3.3.19 Manual Feed Guide Assy

(1) Remove the upper cover (see 3.3.1).

(2) Open the manual feed guide assy ❶, and release the engagement on both sides with the main unit by carefully bending the manual feed guide assy ❶.

Note: At the time of mounting, verify the proper the engagements as shown in the diagram.



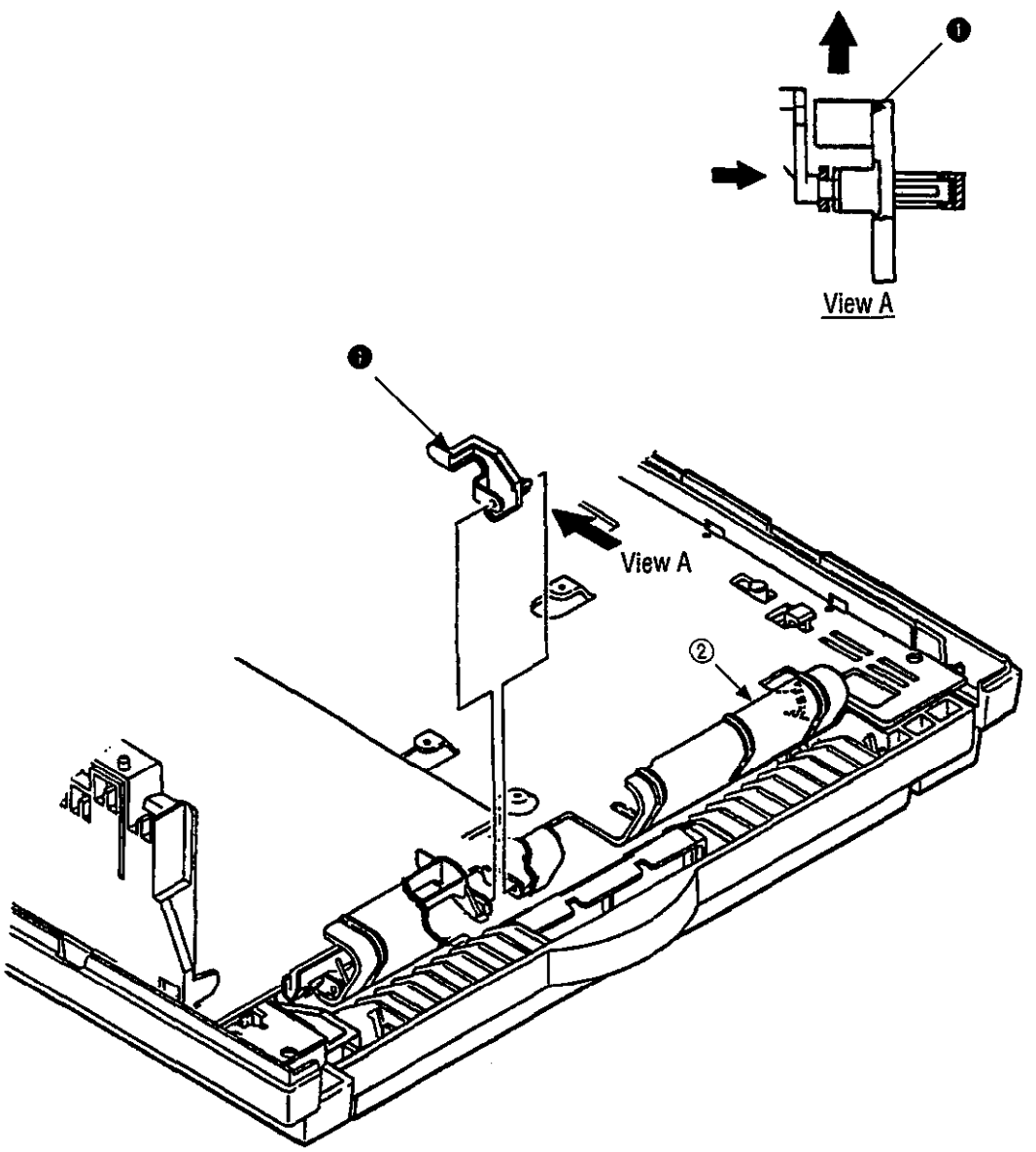


3.3.20 Sensor Plate (Paper Supply)

(1) Remove the upper cover (see 3.3.1).

(2) Remove the lower base unit (see 3.3.8).

(3) Press the clamp of the sensor plate (paper end) ❶, and remove it from the base plate ②.



3.3.21 Control Board

- When exchanging the control board, remove the EEPROM off the existing board and install it on the new one.

- The control board is different for each model.
  OL400e and OL400ex: OLCW-PCB
  OL410ex: OLCW-3 PCB

(1) Remove the upper cover (see 3.3.1).

(2) Remove the lower base unit (see 3.3.8).

(3) Remove two screws ①.

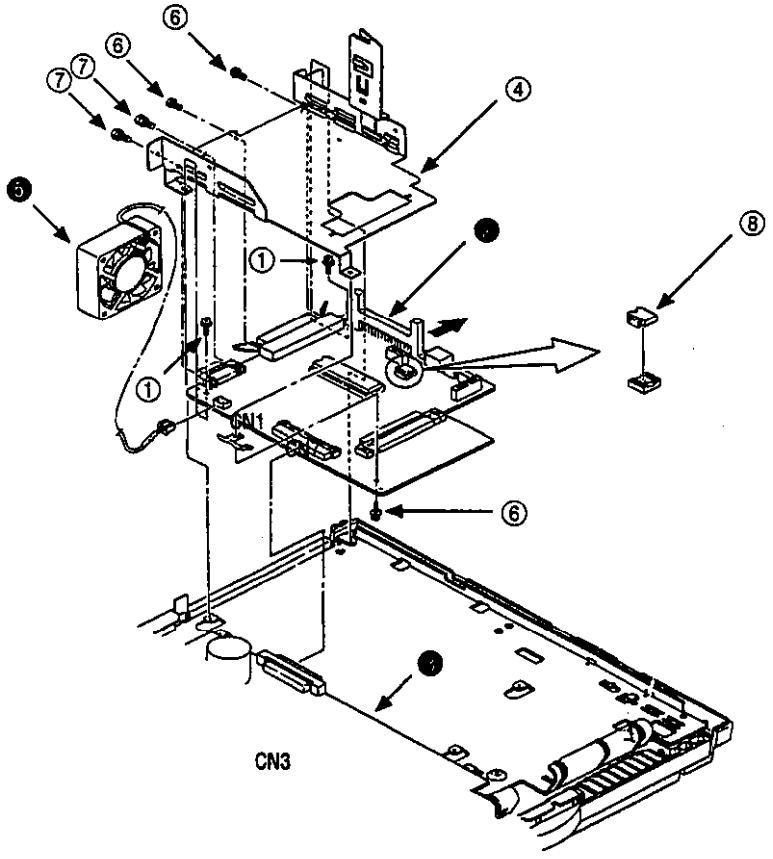
(4) Move the control board ❷ in the direction of the arrow to disconnect it from the power supply board ❸.

(5) Remove the control board ❷ together with the PCB guide plate ④ (remove the fan motor ❺ at the same time).

(6) Remove three screws ⑥ and two posts ⑦, and remove the PCB guide plate ④ from the control board ❷.

(7) Disconnect the connector from CN1 of the control board ❷, and remove the fan motor ❺.

Note: Install the EEPROM ⑧ on the new control board.



3.3.22 Power Supply Board and Contact **Assy**

(1) Remove the upper cover (see 3.3.1).

(2) Remove the lower base unit (see **3.3.8).**

(3) Remove the control board (see 3.3.21).

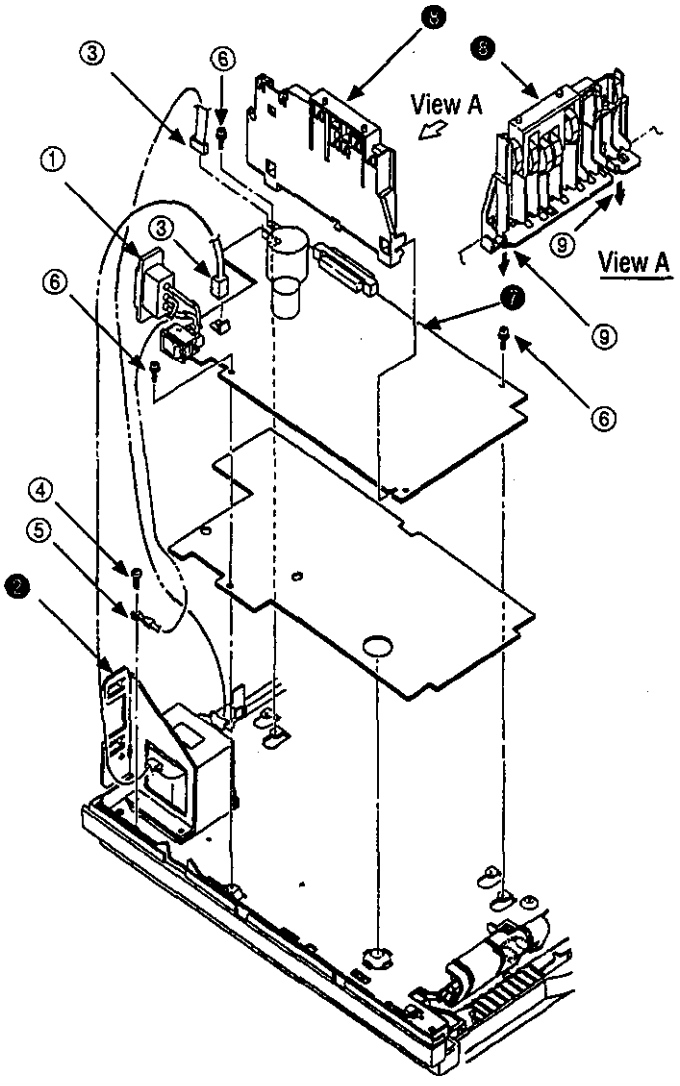
(4) Remove the AC inlet ① from the inlet holder ❷, and remove the connector ③ of the transformer.

(5) Remove the screws ④, and remove the ground cable.

(6) Remove three screws ⑥, and remove the power supply board ❼ and contact assy ❽ at the same **time.**

(7) Unlock two claws ⑨, and remove the contact assy ❽ from the power supply board ❼.

Note: When mounting the lower base unit, be careful about the paper sensor.
Do not apply excessive force on the power switch.



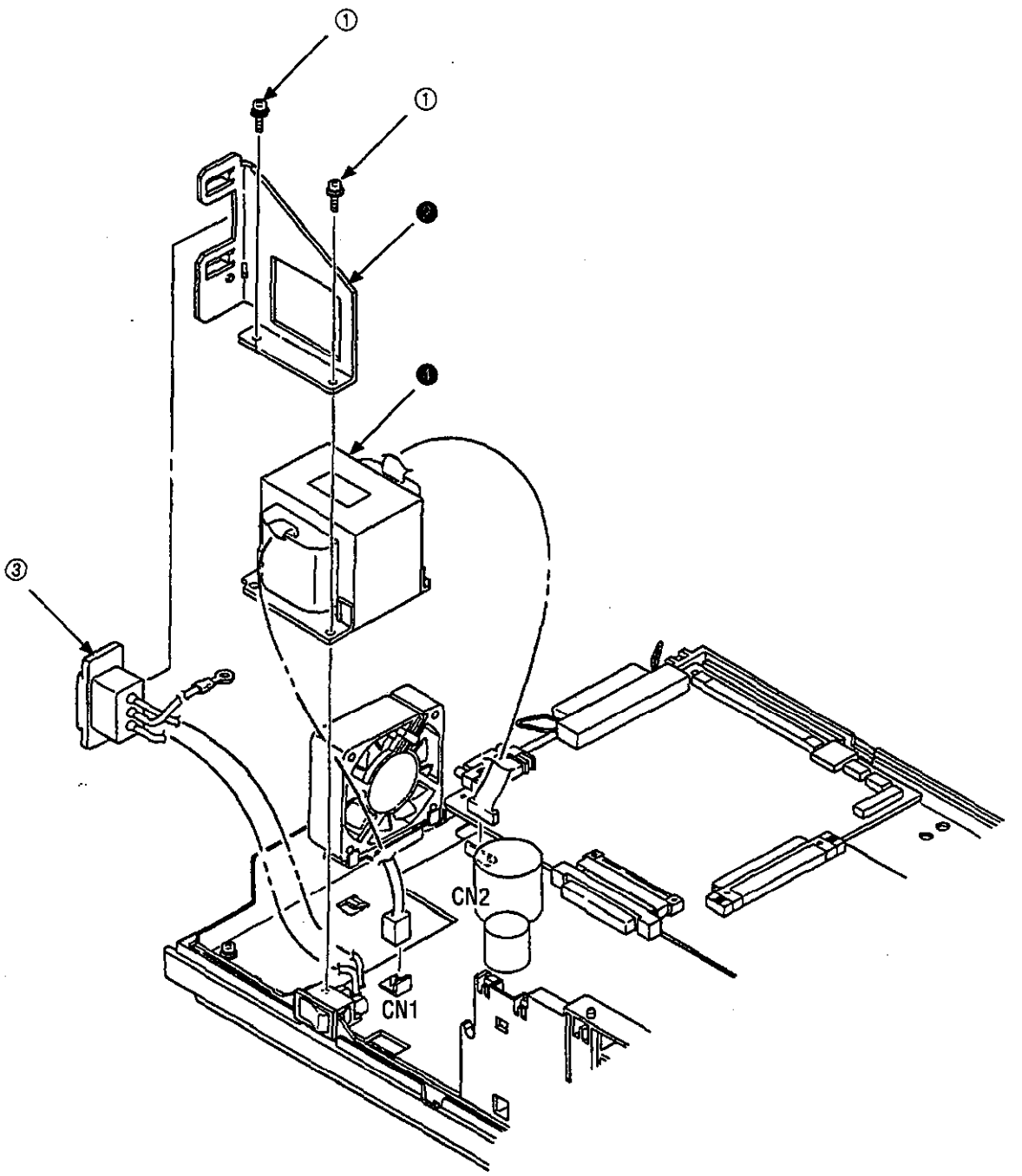
3.323 Transformer

(1) Remove the upper cover (see 3.3.1).

(2) Remove the connectors (CN1 and CN2).

(3) Remove the inlet ③ from the inlet holder ❸.

(4) Remove two screws ①, and remove the inlet holder ❷ and the transformer ❶.



3.3.24 Cassette Guide L

(1) Remove the paper cassette.

(2) Remove the upper cover (see 3.3.1).

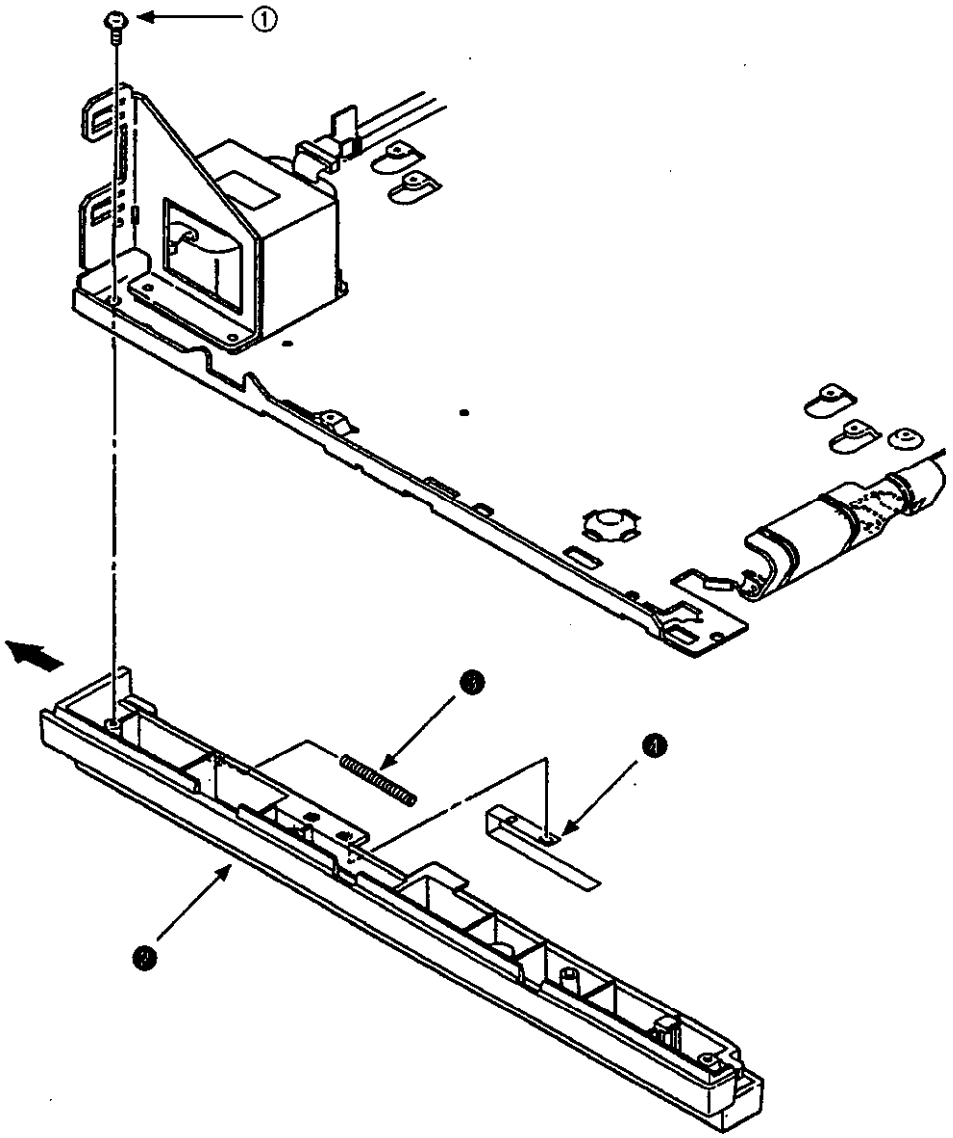
(3) Remove the lower base unit (see 3.3.8).

(4) Remove the control board (see 3.3.21).

(5) Remove the power supply board (see 3.322).

(6) Remove the screw ①, and remove the cassette guide L ❷ by shifting it in the direction of the arrow.

(7) Detach the eject spring ❸, and remove the support spring ❹ from the cassette guide L ❷.



3.3.25 Cassette Guide R

(1) Remove the paper cassette.

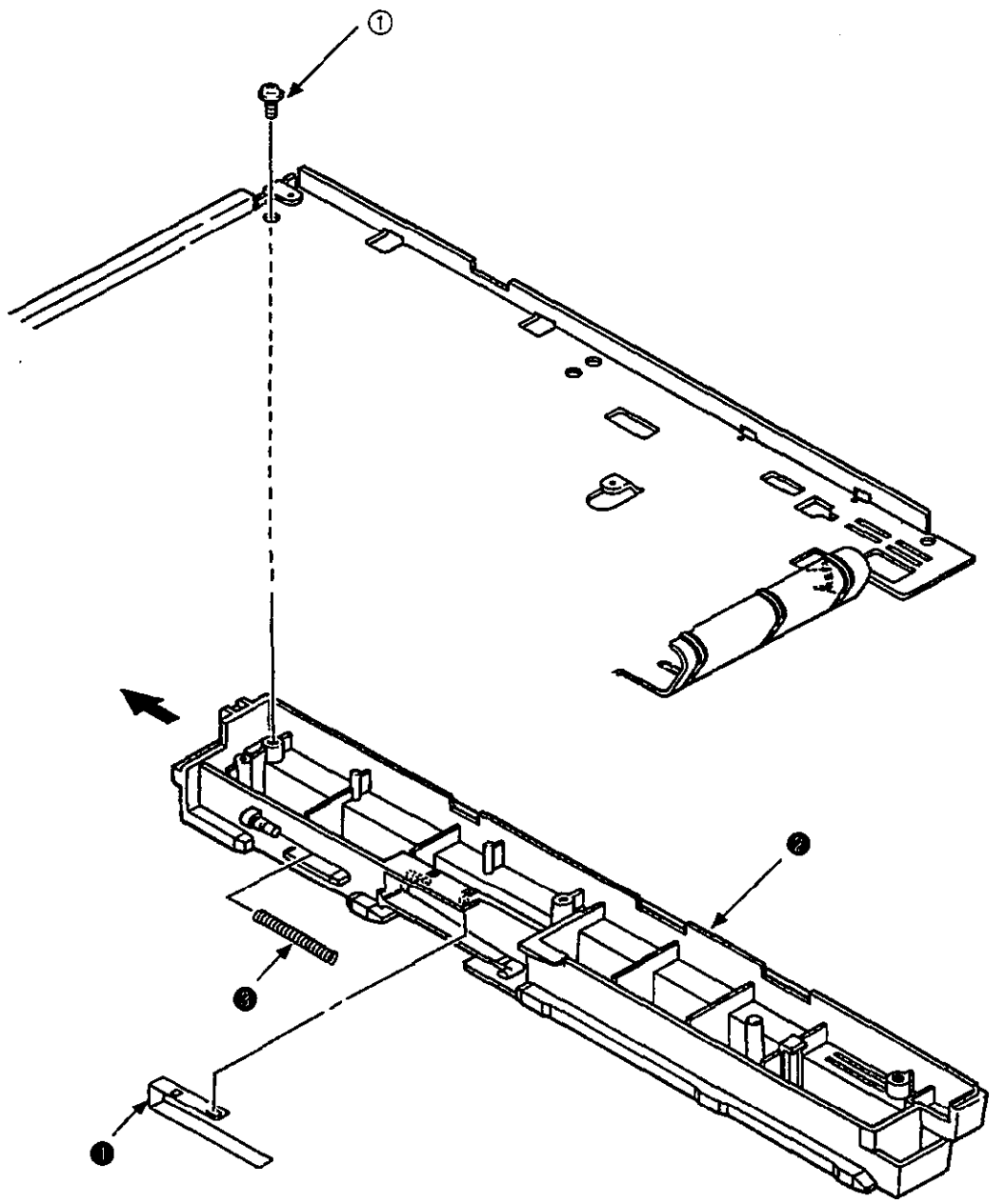
(2) Remove the upper cover (see 3.3.1).

(3) Remove the lower base unit (see 3.36).

(4) Remove the control board (see 3.3.21).

(5) Remove the screw ①, and remove the cassette guide R ❷ by shifting it in the direction of the arrow.

(6) Pull the eject spring ❸ out of the cassette guide R ❷, then remove the support spring ❹.



4. ADJUSTMENT

4. ADJUSTMENT

This chapter provides explanations concerning the adjustment necessary when replacing a part. The adjustment is made by changing the parameter value set in EEPROM on the control board. The parameter can be set by the key operation from the operator panel. This printer has three kinds of maintenance modes, and it is necessary to select one of the modes when replacing a part.

4.1 Maintenance Modes and Functions

4.1.1 User Maintenance Mode

To enter into the user-maintenance mode, turn the POWER switch on while holding the MENU key down.

Function

There are five functions as follows:

- Hex dump
- Drum counter reset
- Menu reset
- Opepane menu disable
- X-adjust / Y-adjust (OL410ex only)

Detailed descriptions of these functions are provided in Appendix D, DIAGNOSTICS TEST.

4.1.2 System Maintenance Mode

Note: This mode is used only by service persons and it should not be released to the end-users.

To enter into the system maintenance mode, turn the POWER switch on while holding the RECOVER key down.

Function

There are five functions as follows:

- Page count display
- Loop test
- Page count printing enable/disable
- EEPROM reset
- Rolling ASCII continues pronating

Detailed descriptions of these functions are provided in Appendix D. DIAGNOSTICS TEST.

4.1.3 Engine Maintenance Mode

Note: This mode is used only by service persons, and it should not be released to the end users.

To enter into the engine maintenance mode, turn the POWER switch on while holding the FORM FEED and ENTER keys down.

Function

There are six functions as follows:

- Head drive time setting
- Printing start position setting
- Drum count display
- Drum count total display
- Engine reset
- Factory adjustment

Note: "Printing start position setting" is for shipping. Do not change its default value.

Detailed descriptions of these functions are provided in Appendix D, DIAGNOSTICS TEST.

4.2 Adjustment When Replacing a Part

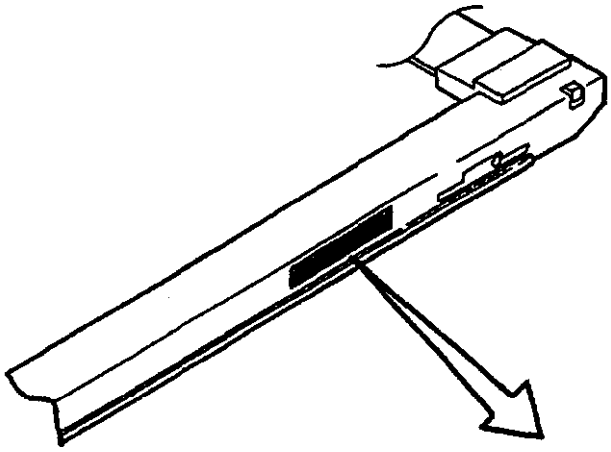
Adjustment is necessary when replacing any one of the following parts,

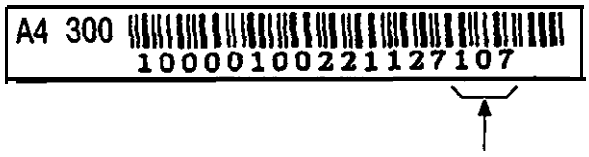
Part Replaced	Adjustment
LED Head	Set the LED head drive time.
Image Drum Cartridge	Reset the image drum counter (refer to Users manual).

4.2.1 Setting of LED Head Drive Time

Note: When the luminous intensity marking of the replacement LED head (new part) is same as that of the removed LED head (old part), do not set the LED head drive time.

- Luminous Intensity Marking Label





Last 3 digits represent the LED head marking number.

Luminous intensity marking
100
⋮
313

- Setting of LED Head Drive Time

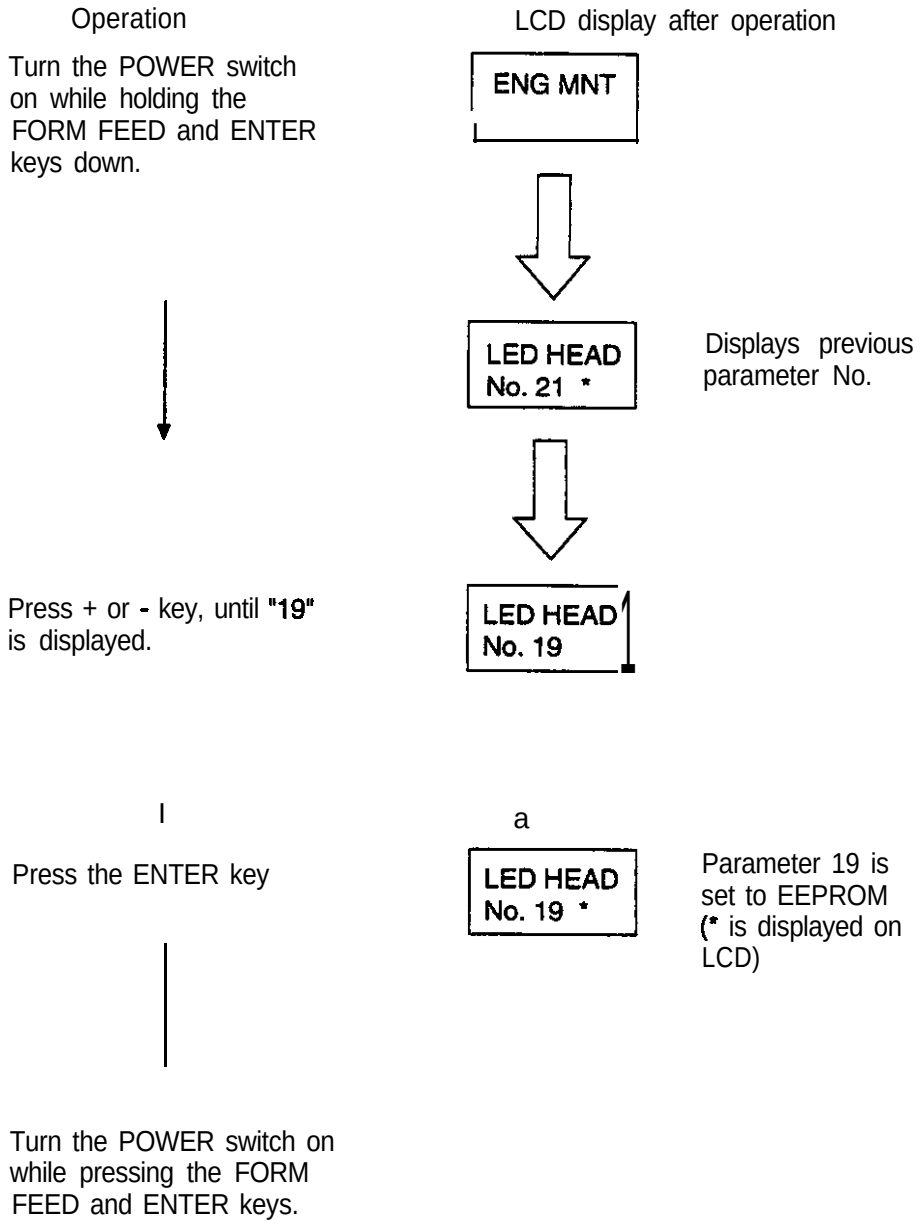
  Drive time of the LED head is set by setting the parameter of drive time of EEPROM according to the lumious intensity marking on the LED head.

a. Corresponding table of lumious intensity marking and drive time parameter

Luminous intensity marking on LED head	Drive time parameter	Luminous intensity marking on LED head	Drive time parameter
100 ~ 104	27	181 ~ 195	19
105-112	26	196-211	18
113 ~ 121	25	212 ~ 228	17
122-131	24	229 ~ 247	16
132 ~ 142	23	246-268	15
143 ~ 154	22	269 ~ 290	14
155 ~ 167	21	291 ~ 313	13
168 ~ 180	20		

b. Setting

Example: Method for setting the parameter to 19 (for case where the previous parameter setting was 21).


Operation
LCD display after operation
Turn the POWER switch on while holding the FORM FEED and ENTER keys down.
ENG MNT
LED HEAD No. 21 *
Displays previous parameter No.
Press + or - key, until "19" is displayed.
LED HEAD No. 19
I
a
Press the ENTER key
LED HEAD No. 19 *
Parameter 19 is set to EEPROM (* is displayed on LCD)
Turn the POWER switch on while pressing the FORM FEED and ENTER keys.

5. PERIODICAL MAINTENANCE

5. PERIODICAL MAINTENANCE

5.1 Periodical Replacement Parts

The parts are to be replaced periodically as specified below:

Part name	Condition for replacement	Cleaning	Remarks
• Toner cartridge	About 2,000 sheets of paper have been printed.	• LED head.	Consumables
• Image drum cartridge	About 20,000 sheets of paper have been printed.		Consumables

5.2. Cleaning

Remove any toner or dust accumulated inside the printer. Clean in and around the printer with a piece of cloth when necessary. Use the handy cleaner (service tool) to clean inside the printer.

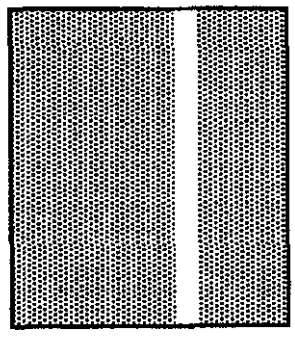
Note: Do not touch the image drum, LED lens array, or LED head connector block.

5.2.1 Cleaning of LED Lens Array

Clean the LED lens array or replace the toner cartridge when white lines or stripes (void, light printing) are generated vertically down the page.

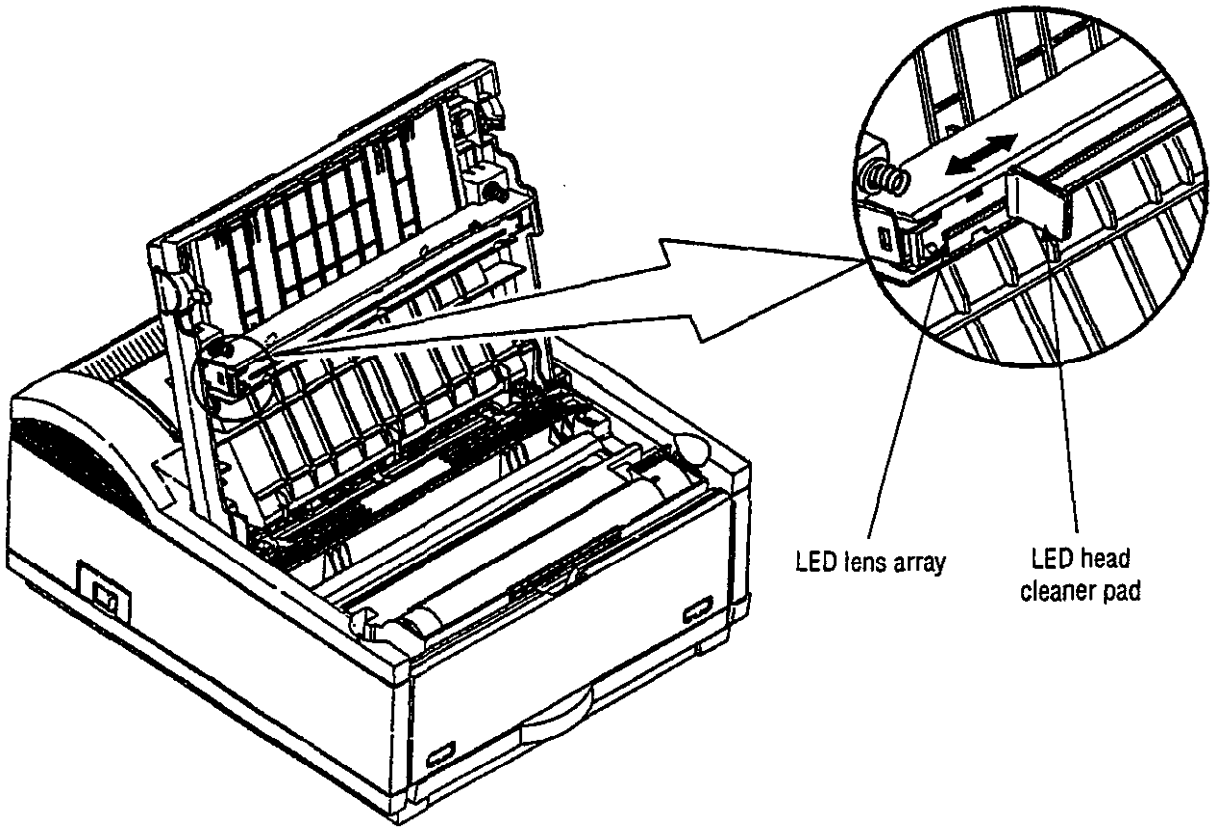
Note: The LED lens array must be cleaned with an LED head cleaner.

White lines or stripes
(void, light printing)



(1) Set the LED head cleaner to the LED lens array as shown in the figure, then slide the cleaner back and forth horizontally several times to clean the head.

Note: Gently press the LED head cleaner onto the LED lens array.



(2) Throw the cleaner pad away.

6. TROUBLESHOOTING PROCEDURES

6. TROUBLESHOOTING PROCEDURES

6.1 Troubleshooting Tips

(1) **Check the basic check points covered in the user's manual.**

(2) **Gather as much information about the problem from the customer as possible.**

(3) **Inspect the equipment under the conditions close to those in which the problem had occurred.**

6.2 Points of Check before Correcting Image Problems

(1) **Is the printer being Nn in proper ambient conditions?**

(2) **Are supplies (toner) and routine replacement part (image drum cartridge) being replaced properly?**

(3) **Is the printing paper normal?**

(4) **Is the image drum cartridge being loaded property?**

6.3 Tips for Correcting Image Problems

(1) **Do not touch, or bring foreign matter into contact with the surface of the image drum.**

(2) **Do not expose the image drum to direct sunlight.**

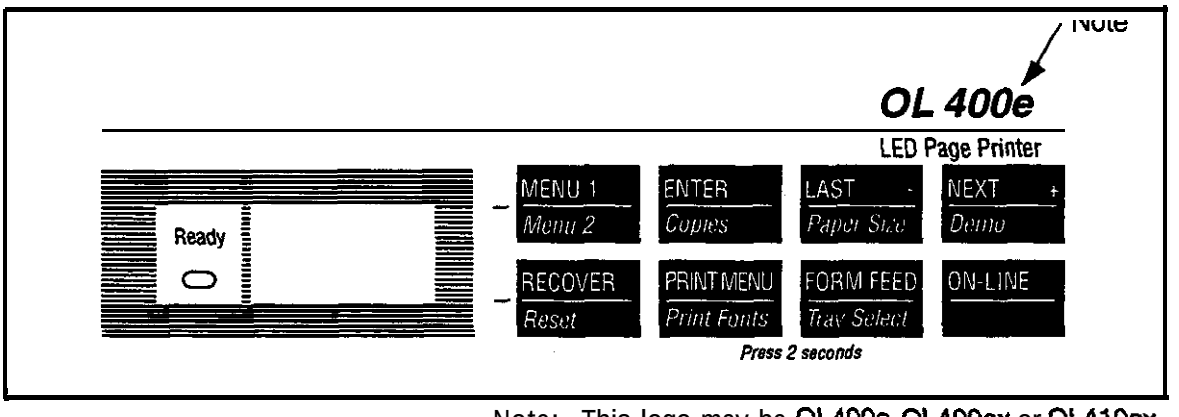
(3) **Keep hands off the fuser unit as it heats up during operation.**

(4) **Do not expose the image drum to light for longer than 5 minutes at room temperature.**

6.4 Preparation for Troubleshooting

(1) Operator panel display

The failure status of the printer is displayed by the liquid crystal display (LCD) of the operator panel. Take proper corrective action as directed by messages which are being displayed on the LCD.



Note: This logo may be OL400e, OL400ex or OL410ex.

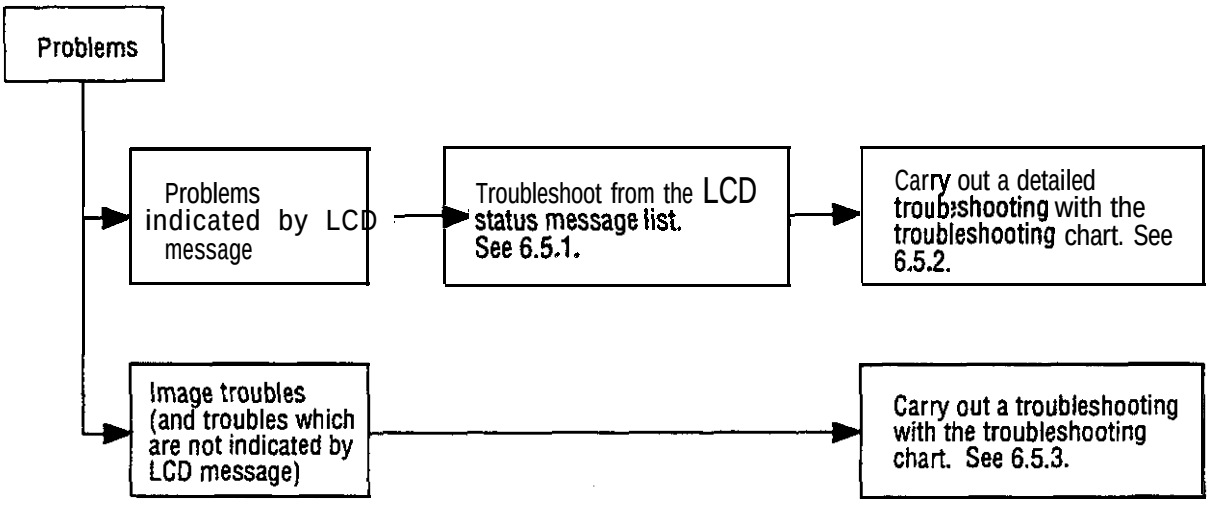
Status message display

Ready LED display

■ : OFF ▨ : BLINKING
▨ : ON ▭ : Undefined

6.5 Troubleshooting Flow

Should there be a problem with the printer, troubleshoot according to the following procedure flow:


Problems
Problems indicated by LCD message
Troubleshoot from the LCD status message list. See 6.5.1.
Carry out a detailed troubleshooting with the troubleshooting chart. See 6.5.2.
Image troubles (and troubles which are not indicated by LCD message)
Carry out a troubleshooting with the troubleshooting chart. See 6.5.3.

65.1 LCD status message/trouble list

The status and problems which may be displayed by messages on the LCD are listed in Table 6-1.

Table 6-1

Category	LCD status message	Trouble or status	Remedy
Controller errors	ERROR On aaaaaaaa	An error occurred in the controller. n = Exception Code aaaaaaa = Error Address	– Normal operation cannot be ensured. Turn the power off, then back on to restart. – If normal operation is not recovered by this restart procedure, replace thecontrol board.
	CARD FORMAT	A checksum error occurred when a card was inserted.	– Turn the power off, then back on to recover from the error. – If a card other than those for OL printer is being inserted, no error is displayed and the inserted card is ignored.
	ERROR nn	An error occurred in the controller.	– Turn the power off, then back on to recover from the error. – If the normal operation Is not recovered by this restart procedure, use the following remedial actions.

Table 6-1 (Cont'd)

Category	LCD status message	Trouble or status		Remedy
Controller errors	■ ERROR nn	Code (nn)	Error	Remedy
		On	A fault occurred in the controller. n = Exception Code	Replace the control board.
		10	An error was detected by program ROM check.	Replace the control board.
		20	An error was detected by font ROM check.	Replace the control board.
		30	An error was detected by resident RAM check.	Replace the control board.
		40	An error was detected by EEPROM check.	– Replace the EEPROM or control board – EEPROM
		50	An error was detected by optional software ROM check.	Check the optional software ROM board for proper connection or replace it.

Table 6-1 (Cont'd)

Category	LCD status message	Trouble or status		Remedy
Controller errors	ERROR nn	Code (nn)	Error	Remedy
		60	An error was detected by optional RAM check.	– Check the optional RAM board for proper connection. – Check the mounting position of short plugs and additional RAM chips (see 7.4). – Replace the option RAM board.
		70	A fault occurred in the Fan motor.	– Check the fan motor for proper connection and for any presence of foreign matter in the fan (see 6.5.2-o). – Replace the fan or the control board.
		71	A fault occurred in the fuser (timeout error etc.).	See 6.5.2 - ④
		72	A fault occurred in the fuser (thermistor open error).	See 6.5.2 - ④
		73	A fault occurred in the fuser (thermistor short error).	See 6.5.2 - ④.
		80	I/F timeout occurred between the control board and the operation panel.	– Check the operation panel for proper connection. – Replace the flexible cable, operation panel or control board.

Table 6-1 (Cont'd)

Category	LCD status message	Trouble or status		Remedy
Controller errors	ERROR nn	Code (nn)	Error	Remedy
		81	I/F timeout occurred between the control board and the optional tray (2nd tray, envelope feeder, etc.).	Check the optional tray for proper connection
		90	A watchdog timer timeout occurred.	– Turn the power off, then back on to recove from the error. – Replace the control board.
Interface errors	HOST I/F ERROR	An error occurred in the serial I/F. This message is displayed when a parity error, a framing error or an overrun error is detected.		– Press the operator panel RECOVER key to release the error display. – Check the settings related serial I/F of the menu. – Replace theserial I/F cable or control board.
Cover open	COVER OPEN	The upper cover was opened.		– Close the cover to release the error display. – If the display does not change after this procedure, replace the OLAA-PCB.
Jam errors	PAPER INPUT JAM	A jam occurred during paper hopping from the tray.		– Check the paper in the cassette. Open and then close the cover. When the cover is closed, recovery printing is performed and the error display is released. – If this error occurs frequently, see 6.52. ②-1.

Table 6-1 (Cont'd)

Category	LCD status message	Trouble or status	Remedy
Jam errors	PAPER FEED JAMn	A jam occurred during paper feeding after finishing paper hopping from the tray.	– Open the cover, remove the paper, then close the cover. When the cover is closed, recovery printing is performed and the error display is released. – If this error occurs frequently, see 6.52 ②-2.
	PAPER EXIT JAMn	Jam occurred during paper ejecting.	– Open the cover, remove the paper, then close the cover. When the cover is closed, recovery printing is performed and the error display is released. – If this error occurs frequently, see 65.2 ②-3.
Paper size error	PAPER SIZE ERRn	Paper of improper size is being fed from the tray.	– Check the paper in the tray or check to see if more than one sheet of paper were being fed simultaneously. – Set the designated paper in the tray. – Open the cover, then close it to perform recovery printing and release the error display. – If this error occus frequently, see 6.5.2 ③.
Tray paper out	TRAY PAPEROUT	The tray has run out of paper.	Load paper in the tray.

Table 6-1 (Cont'd)

Category	LCD status message	Trouble or status	Remedy
Size error	LETTER PAPER	Loading of paper indicated by the first line message is requested. The paper size may be one of the followings: LETTER, EXECUTIV, LEGAL 14, LEGAL 13, A4 SIZE, A5 SIZE, A6 SIZE, B5 SIZE, FREE SIZE	Load the requested paper in the tray.
	LETTER MANUAL	Manual loading of paper indicated by the first line message is requested. The paper size one of the followings: LETTER, EXECUTIV. LEGAL 14, LEGAL 13, A4 SIZE, A5 SIZE, A6 SIZE. B5 SIZE, FREE SIZE, COM-10, MONARCH, DL ENV, C5 ENV	Load the requested paper in the manual tray.
Optional card error	CARD ERROR	While the power was on, card was inserted or removed.	– Turn the power off, inserted the card, then turn the power back on to recover from the error. – Replace the card.

Table 6-1 (Cont'd)

Category	LCD status message	Trouble or status	Remedy
Suffer overflow	REC BUFF OVERFLOW	The receive buffer is overflowing.	– Press the operator panel RECOVER key to release the error display. – Change the setting of the host or printer so that the Host can detect the busy status of the printer. Resend the data from the host to the printer. – Replace the interfacecableorcontrolboard.
	PAGE BUF OVERFLOW	The page buffer is overflowing because it received too much data for printing on the page.	– Press the operator panel RECOVER key to release the error display. – Install additional optional RAM board or reduce the print data.
	DLL BUFF OVERFLOW	The DLL buffer is overflowing.	– Press the operator panel RECOVER key to release the error display. – Install additional optional RAM board or reduce the DLL data.
	MACRO OVERFLOW	Macro buffer is overflowing.	– Press the operator panel RECOVER key to release the error display. – Install additional optional RAM board or reduce the macros.
	PRINT OVERRUN	The printer overrun because the print data is too complicated to be printed.	– Press the operator panel RECOVER key to release the error display. – Simplify page data formatting.

Table 6-1 (Cont'd)

Category	LCD status message	Trouble or status	Remedy
Daily status	OFF-LINE HPIIP	The printer is in the off-line mode.	Normal operation.
	DATA HPIIP	The printer is processing data in the on-line mode. **Ready ON:** The data that is not printed remains in the buffer. Ready flashing: Theprinterisreceivingdata.	
	PRINT FONTS	All fonts of the printer are being printed during self-test.	
	PRINT MENU	The current menu setting is being printed. **Ready ON:** Executed by command entry. Ready flashing: Executedby key operation.	

Table 6-1 (Cont'd)

Category	LCD status message	Trouble or status	Remedy
Daily status	PRINT DEMO	The demo page is being printed.	Normal operation.
	CPYnn/nn displayed	When the number of copies being printed is two or more, the number of copies being printed is displayed. This message is displayed together with another message on the first line.	
	RESET default settings.	The data which remained unprinted in the buffer is deleted and the printer is initialized to user settings. The temporary DLLs and macros are deleted.	
	RESET TO SAVE	This message is displayed when the printer cannot resetautomatically toexitfrom the menu because there are data and DLL's and macros having temporary attributes when the printer is changed from set mode to other mode.	

Table 6-1 (Cont'd)

Category	LCD status message	Trouble or status	Remedy
Daily status	TONERLOW	Toner is running out. This message is displayed together with other message on the first line. Normal operation can be continued.	– Replace the toner cartridge.
	TONERSNS	A fault occurred in the tonersensor. This message is displayed together with other message on the first line. Normal operation can be continued.	– Replace the power supply board.
	CHG DRUM	This message is displayed together with other message on the first line. Normal operation can be continued.	– Replace the image drum cartridge. – After replacing the drum cartridge, reset the drum counter (refer to the User's Manual).
	PWR SAVE	The printer is in the power-saving mode. This message is displayed together with other message on the first line.	Normal operation.

6.5.2 LCD message troubleshooting

If the problems are not correctable by using the LCD message trouble list, follow the trouble-shooting flowcharts given here to deal with them.

No	Trouble	Flowchart number
1.	The printer does not work normally after the power is turned on.	①
2.	Jam alarm	
	├ Paper input jam	②-1
	├ Paper feed jam	②-2
	└ Paper exit jam	②-3
3.	Paper size error	③
4.	Fusing unit error	④
5.	Fan error	⑤

① The printer does not work normally after the power is turned on.

- Turn the power off, then back on.
- Is all 8's message being displayed by the LCD display?

```
88888888
88888888
```

- **No** Is the AC cable being connected properly?
  - No Connect the cable properly.
- **Yes** Is +5 V being applied between pins 2 and 5 of CN5 on the control board?
  Pin 2 : O V
  Pin 5 : +5 V
  - Ⓐ → **No** Is the connection between connector CN7 on the control board and connector CN3 on the power supply board made properly?
    - No Correct the connection.
  - **Yes** Go to ①-1.
- **Yes** Is +8 V being applied between pins 30 and 31 (GND) of connector CN7?
  - **No** Go to Ⓐ
- **Yes** Is the flexible cable for the operator panel assy being connected to the connector CN5 on the control board and the connector CN1 on the OLLD board properly?
  - NO Connect the flexible cable properly.
- **Yes** Replace the operator panel assy or flexible cable.
- Remedy?
  - **No** Replace the control board.
- **Yes** End

'es Is `INITIAL-IZING` message being displayed by the LCD display?

- **No** Replace the control board.

'es Is `ON-LINE HP IIP` 'message being displayed by the LCD display?

- **No** Take actions following the LCD message list (see 6.5.1 for correct actions).

• Yes End

↓

①-1

↓

• Take the measurement of the following voltages at connector CN2 on the power supply board:

Voltage between pins 1 and 3: . . . about 28 V AC
Voltage between pins 5 and 6: . . . about 10 V AC Are the voltages normal?

• Yes Is fuse F3 on the power supply board blown?

↓

• No Replace the power supply board.

• Yes Replace fuse F3 (if it blows again, check the resistance of the resist and drum motors. If it is faulty, replace motors or replace the power supply board or control board).

↓

• No Is the AC input voltage output between pins 1 and 2 of connector CN1 on the power supply board normal?

• Yes Replace the AC transformer.

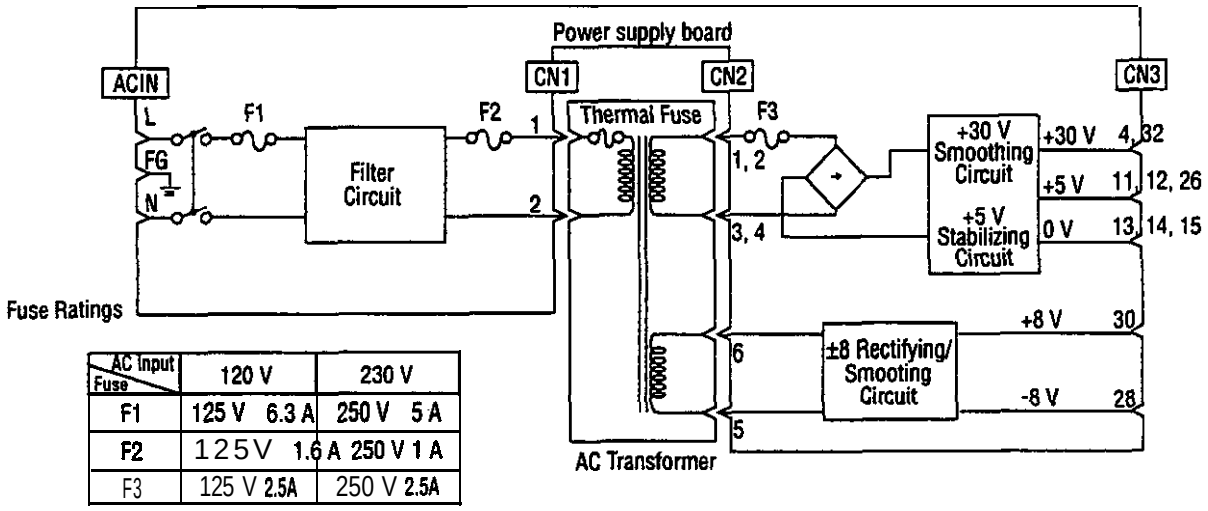
↓

• No Is fuse F1 or F2 on the power supply board blown?

• No Replace the power supply board.

↓

• Yes Replace blown fuse F1 or F2 (ii is blows again, replace the power supply board).



Fuse Ratings

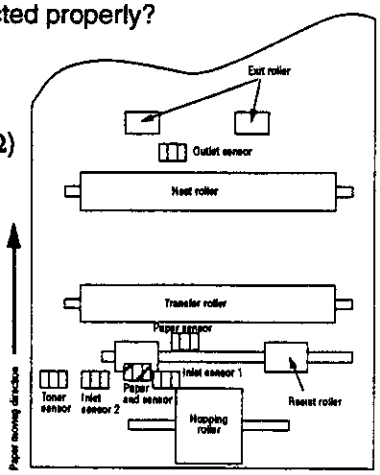
AC Input / Fuse	120 V	230 V
F1	125 V 6.3 A	250 V 5 A
F2	125V 1.6 A	250 V 1 A
F3	125 V 2.5A	250 V 2.5A

Figure 6-1 Low-voltage Power Supply Block Diagram

[JAM error]

②-1 Paper input jam

- Does the JAM error occur when the power is turned on?
  - Yes — Is the paper at the inlet sensor?
    - Yes — Remove the paper.
  - No — Is the operation of the inlet sensor lever normal (moves freely when touched)?
    - No — Replace the inlet sensor lever.
  - Yes — Clean the inlet sensor on the power supply board, or replace the power supply board.
- No — Does the JAM alarm occur after paper feeding?
  - Yes — Is the paper fed to the inlet sensor lever?
    - Yes — Is the operation of the input sensor lever normal (moves freely when touched)?
      - No — Replace the inlet sensor lever.
    - Yes — Clean the inlet sensor on the power supply board or replace the power supply board.
  - No — Replace the hopping roller rubber or tray.
- No — Is the hopping roller rotating?
  - Yes — Set the paper tray properly.
- No — Is the resist motor rotating?
  - Yes — Replace the one-way clutch gear of the hopping roller assembly.
- No — Is connector CN3 on the control board being connected properly?
  - No — Connect connector CN3 properly.
- Yes — Is the coil resistance (normal resistance: about 32 Ω) of the resist motor normal (see 7.3)?
  - No — Replace the resist motor.
- Yes — Replace the control board.

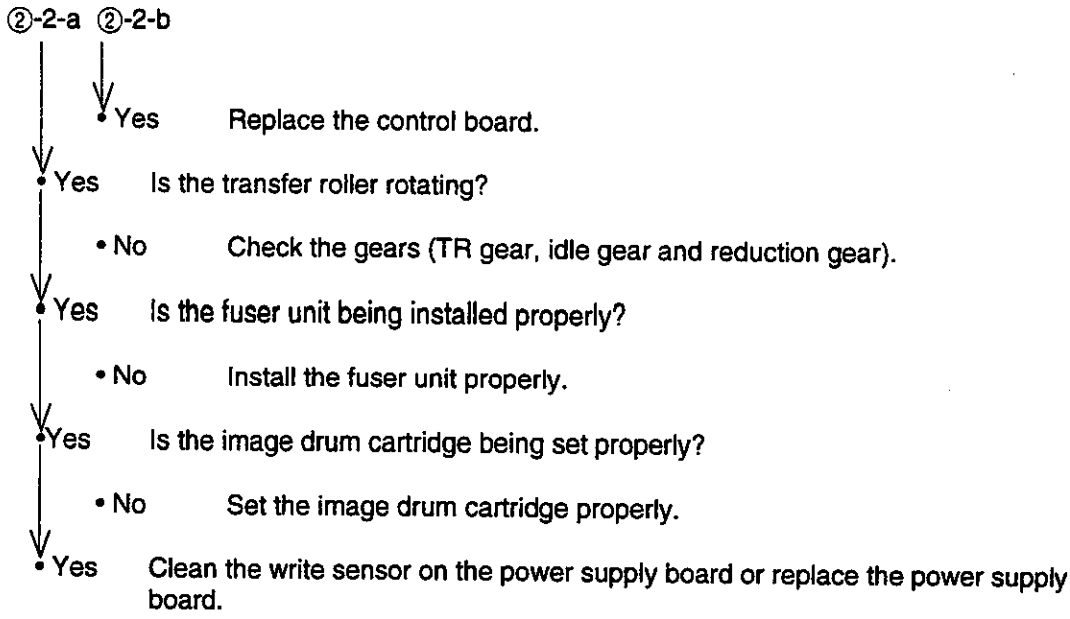


[JAM error]

②-2 Paper feed jam

- Does the paper feed jam occur when the power is turned on?
  - Yes — Is the paper on the paper sensor lever?
    - Yes — Remove the paper.
    - No — Is the operation of the paper sensor lever normal (moves freely when touched)?
      - No — Replace the paper sensor lever.
      - Yes — Replace the power supply board.
  - No — Has the paper reached the paper sensor lever?
    - No — Is the resist roller rotating?
      - No — Replace the one-way clutch gear.
      - Yes — Is the image drum cartridge being set properly?
        - No — Set the image drum cartridge properly.
        - Yes — Check the hopping roller assembly or tray.
    - Yes — Has the paper reached the outlet sensor lever?
      - Yes — Is the operation of the outlet sensor lever normal (moves freely when touched)?
        - No — Replace the outlet sensor lever.
        - Yes — Clean the outlet sensor on the power supply board or replace the power supply board.
      - No — Is the drum motor rotating?
        - No — Is connector CN2 on the control board being connected?
          - No — Connect connector CN2 properly.
          - Yes — Is the coil resistance (normal resistance: about 32Ω) of the drum motor correct (refer to 7.3)?
            - No — Replace the drum motor.

②-2-a ②-2-b


②-2-a
②-2-b
• Yes
Replace the control board.
• Yes
Is the transfer roller rotating?
• No
Check the gears (TR gear, idle gear and reduction gear).
• Yes
Is the fuser unit being installed properly?
• No
Install the fuser unit properly.
• Yes
Is the image drum cartridge being set properly?
• No
Set the image drum cartridge properly.
• Yes
Clean the write sensor on the power supply board or replace the power supply board.

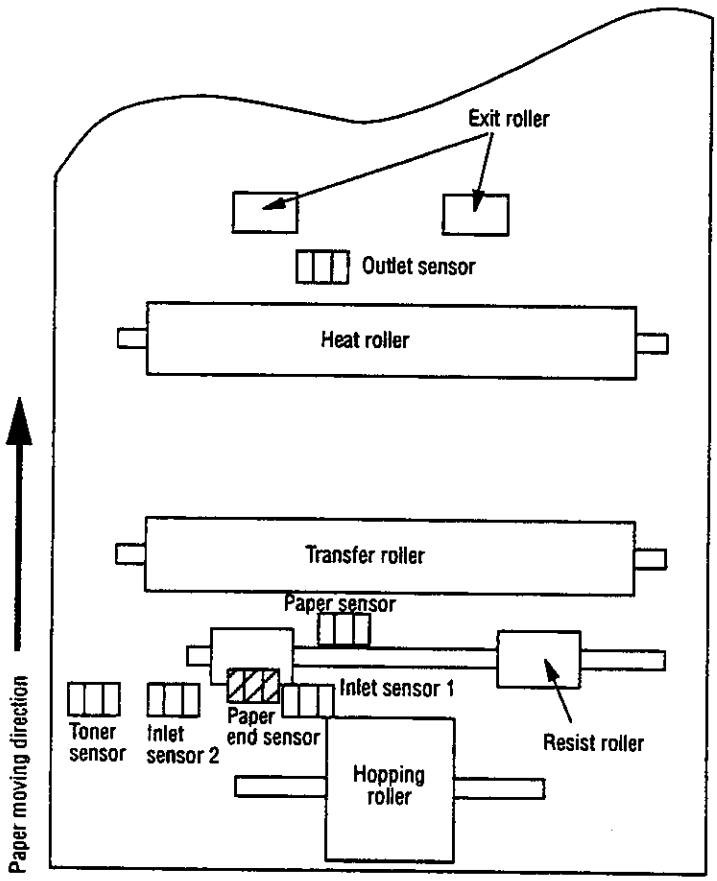
[JAM error]

②-3 Paper exit jam

- Does the paper exit jam error occur when the power is turned on?
  - Yes — Is the paper on the outlet sensor lever?
    - Yes — Remove the paper.
    - No — In the operation of the outlet sensor lever normal (moves freely when touched)?
      - No — Replace the outlet sensor lever.
      - Yes — Clean the outlet sensor on the power supply board or replace the power supply board.
  - No — Is the face-up stacker pulled out completely from the printer or, pushed into the printer completely?
    - No — Pull the face-up stacker out of the printer completely or push it into the printer completely.
    - Yes — Is the eject roller assembly being installed properly?
      - No — Install the eject roller assembly properly.
      - Yes — Has the coil spring come off the eject roller assembly?
        - Yes — Install the coil spring to the eject roller assembly.
        - No — Replace the eject roller assembly.

③ Paper size error

- Is paper of the specified size being used?
  - No — Use paper of the specified size.
- Yes — Are inlet sensor levers 1 and 2 operating properly (moves freely when touched)?
  - No — Replace the inlet sensor lever or clean the inlet sensor on the power supply board.
- Yes — Does the outlet sensor lever operate properly (moves freely when touched)?
  - No — Replace the outlet sensor lever or clean the outlet sensor on the power supply board.
- Yes — Replace the power supply board.



④ Fusing unit error (ERROR 71) (ERROR 72) (ERROR 73)

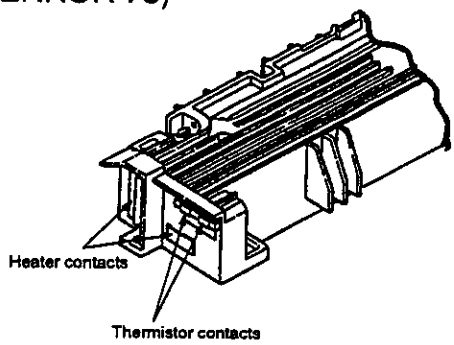


Fig. 6-2

- Turn the power off, then back on.
- Does the fusing unit error occur immediately?
  - Yes — Is the thermistor open or shorted? Measure the resistance between thermistor contacts (about 220kΩ at room temperature) (see Fig. 6-2 or see 7.3).
    - Yes — Replace the fusing unit.
  - No — Do the thermistor contacts touch the contact assembly properly when the fusing unit is mounted in the printer (see Fig. 6-4 contact Ⓕ)?
    - No — Adjust the contact.
    - Yes — Replace the control board or power supply board.
- No — Does the fusing unit error occur about 60 seconds after the power is turned on?
  - No — Check the thermistor for poor contact or replace the control board.
- Yes — Turn the power off, then back on.
- Is the heater of the fusing unit turned on (when the heater is turned on, light is emitted)?
  - Yes — Check thermistor contacts or replace the control board or the fuser unit.
- No — Is the heater or the thermostat open? Measure the resistance between the heater contacts (normal resistance: about 0Ω) (see Fig. 6-2 or see 7.3).
  - Yes — Replace the fusing unit.
- No — Is the AC voltage supplied to the contacts for the heater of the contact assembly? (Refer Fig. 6-2)
  - No — Replace the control board or the power supply board.
- Yes — Check the heat contact of the fusing unit and the contact assembly for poor contact (see Fig. 6-4 contact Ⓖ).

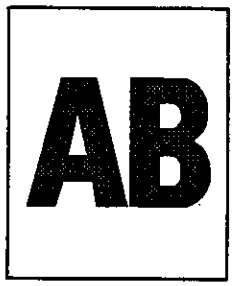
⑤ Fan error (ERROR 70)

- Is the fan rotating?
  - Yes → Replace the control board.
  - No → Is connector CN1 on the control board being connected?
    - No → Connect connector CN1.
    - Yes → Replace the fan or control board (check coil resistance of the fan, See 7.3).

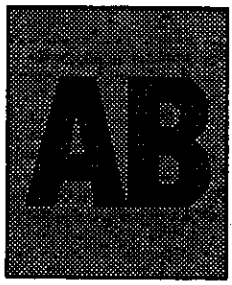
6.5.3 Image troubleshooting

Procedures for troubleshooting for the cases of abnormal image printouts are explained below. Figure 6-3 below shows typical abnormal images.

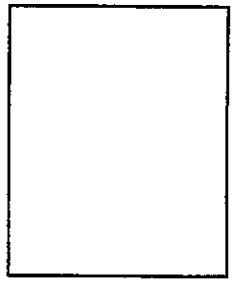
Problem	Flowchart number
Images are light or blurred entirely (Figure 6-3,Ⓐ)	①
Dark background density (Figure 6-3,Ⓑ)	②
Blank paper is output (Figure 6-3,Ⓒ)	③
Black vertical stripes (Figure 6-3,Ⓓ)	④
Cyclical defect (Figure 6-3,Ⓔ)	⑤
Print voids	⑥
Poor fusing (images are blurred or peeled off when touched by hands)	⑦
White vertical streaks (Figure 6-3,Ⓕ)	⑧



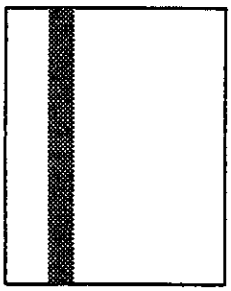
Ⓐ Light or blurred images entirely



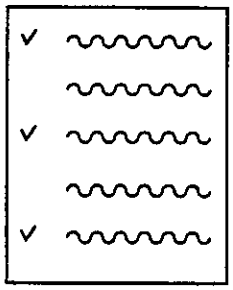
Ⓑ Dark background density



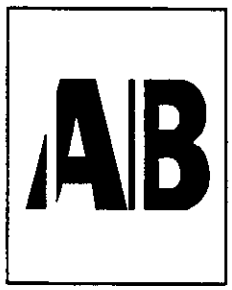
Ⓒ Blank paper



Ⓓ Black vertical stripes



Ⓔ Cyclical defect



Ⓕ White vertical belts or streaks

Figure 6-3

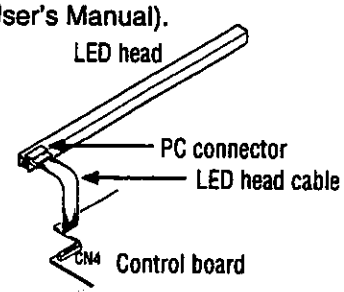
① Images are light or blurred entirely.

- Is toner low (is the TONER LOW message displayed)?
  - Yes — Supply toner.
- No — Is paper of the specified grade being used?
  - No — Use paper of the specified grade.
- Yes — Is the lens surface of the LED head dirty?
  - Yes — Clean the lens.
- No — Is the LED head being installed properly (check connector CN4 of the control board and PC connector on the LED head for proper connection)?
  - No — Install the LED head properly.
- Yes — Is the contact plate of the transfer roller in contact with the contact assembly of the power supply board properly (see Fig. 6-5)?
  - Adjust the contact plate of the transfer roller to make a proper contact with the power supply board and Shaft of the transfer roller.
- Yes — Are the contact of the developing roller and the contact of the toner supply roller of the image drum cartrige in comtact with the contact assembly properly (see Fig. 6-4 Ⓐ and Ⓑ)?
  - No — Adjust the contacts of the developing and toner supply roller to make a proper contact with the contact assembly.
- Yes — Replace the transfer roller.

- Has the problem been removed?
  - Yes — End
- No — Replace the image drum cartridge.

- Has the problem been removed?
  - Yes — End

    Note: After replacing the image drum cartridge, set the printer in the user maintenance mode by turning the power on while pressing the MENU key and reset the drum counter (see User's Manual).
- No — Replace the control board or power supply board.



② Dark background density

- Has the image drum been exposed to external light?
  - Yes — Mount the image drum in the printer and wait about 30 minutes.
- No — Is the heat roller of the fusing unit dirty?
  - Yes — Clean the heat roller.
- No — Is the contact of the cleaning roller of the image drum cartridge in contact with the contact assembly properly (see Fig. 6-4 Ⓒ)?
  - No — Adjust the contact of the cleaning roller to make a proper contact with the contact assembly.
- Yes — Replace the image drum cartridge.

- Has the problem been removed?
  - Yes — End

    Note: After replacing the image drum cartridge, set the printer in the user maintenance mode by turning the power on while pressing the MENU key, and reset the drum counter (see User's Manual).
- No — Replace the control board or power supply board.

③ Blank paper is output.

- Is the LED head being connected properly (check connector CN4 on the control board and PC connector on the LED head)?
  - No — Connect the LED head properly or replace the head cable.
- Yes — Is the contact of the image drum cartrige in proper contact with the ground contact properly (see Fig. 6-4Ⓓ)?
  - No — Check the ground contact of the image drum cartridge.
- Yes — Replace the LED head.

- Has the problem been removed.
  - Yes — End

    Note: After replacing the LED head, set the printer in the engine maintenance mode by turning the power on while pressing the FORM FEED and ENTER keys. Set the LED head drive time (see 4.2).
- No — Replace the control board or power supply board.

④ Black vertical belts or stripes

• Replace the image drum cartridge.

• Has the problem been removed?

• Yes End

Note: After replacing the image drum cartridge, set the printer in the user maintenance mode by turning the power on while pressing the MENU key, and reset the drum counter (see User's Manual).

• No Replace the LED head.

• Has the problem been removed.

• Yes End

Note: After replacing the LED head, set the printer in the engine maintenance mode by turning the power on while pressing the FORM FEED and ENTER keys. Set the LED head druve time (see 4.2).

• No Replace the control board or power supply board.

⑤ Cyclic error

	Frequency	Remedy
Image drum	3.71" (94.2 mm)	Replace or clean the image drum cartridge.
Developing roller	1.66" (44.4 mm)	Replace the image drum cartridge.
Toner supply roller	2.27" (57.8 mm)	Replace the image drum cartridge.
Charging roller	1.56" (39.6 mm)	Replace the image drum cartridge.
Cleaning roller	1.24" (31.4 mm)	Replace the image drum cartridge.
Transfer roller	2.01" (51.0 mm)	Replace the transfer roller.
Heat roller	2.47" (62.8 mm)	Replace the fusing unit assy.
Back-up roller	2.23" (56.5 mm)	For the printers with a serial number up to and including S/N 303Axxxxx: Replace the back-up roller.
	2.72" (69.08 mm)	For the printers with a serial number S/N 304Axxxxx onward: Replace the back-up roller.

Notes:

1. After replacing the image drum cartridge, set the printer in the user maintenance mode by turning the power on while pressing the MENU key, and reset the drum counter. (Refer to User's Manual.)

2 After replacing the fusing unit assy, set the printer in the engine maintenance mode by turning the power on while pressing the FORM FEED and ENTER keys, and reset the

⑥ Print voids

• Is the contact plate of the transfer roller in proper contact with the power supply board (see Fig. 6-5)?

  • No Adjust the contact plate so that it touches the power supply board and the shaft of the transfer roller properly.

↓

• Yes Replace the transfer roller.

• Has the problem been removed.

  • Yes End

↓

• No Are the contacts of the toner supply roller, developing roller, image drum and charging roller in proper contact with the contact assy (see Fig. 6-4 Ⓐ, Ⓑ, Ⓒ, Ⓓ, Ⓔ)?

  • No Adjust the contacts so that they touch the contact assy properly.

↓

• Yes Replace the image drum cartridge.

• Has the problem been removed?

  • Yes End

    Note: After replacing the image drum cartridge, set the printer in the user maintenance mode by turning the power on while pressing the MENU key, and reset the drum counter (see User's Manual).

↓

• No Is the LED head being installed properly (check connector CN4 on the control board and PC Connector on the LED head)?

  • No Install the LED head properly.

↓

• Yes Replace the LED head or the head cable.

• Has the problem been removed?

• Yes End

  Note: After replacing the LED head, set the printer in the engine maintenance mode by turning the power on while pressing the FORM FEED and ENTER keys. Set the LED head drive time (see 4.2).

↓

• No Replace the control board or power supply board.

⑦ Poor fusing

- Is paper of the specified grade being used?
  - No — Use paper of the specified grade.
- Yes — Is the spring of the back-up roller normal?
  - No — Replace the spring.
- Yes — Is the contact of the fusing unit assy in proper contact with the contact assy (see Fig. 6-4 Ⓖ)?
  - No — Adjust the contact of the fusing unit assy to make a proper contact with the contact assembly.
- Yes — Replace the fusing unit assy.

- Has the problem been removed?
  - Yes — End
- No — Replace the control board or power supply board.

⑧ White vertical belts or streaks

- Are the LED lens dirty?
  - Yes — Clean the LED lens.
- No — Is the contact plate of the transfer roller in proper contact with the power supply board (see Fig. 6-5)?
  - No — Adjust the contact plate to make a proper contact with the power supply board.
- Yes — Replace the transfer roller.

- Has the problem been removed?
  - Yes — End
- No — Is the LED head being installed properly (check CN4 connector on the control board and PC connector on the LED head)?
  - No — Install the LED head properly.
- Yes — Replace the LED head.

- Has the problem been removed?
  - Yes — End

    Note: After replacing the LED head, set the printer in the engine maintenance mode by turning the power on while pressing the FORM FEED and ENTER keys. Set the LED head drive time (see 4.2).
- Yes — Replace the image drum cartridge.

- Has the problem been removed?
  - Yes — End

    Note: After replacing the image drum cartridge, set the printer in the user maintenance mode by turning the power on while pressing the MENU key. Reset the drum counter (see User's Manual).
- No — Replace the control board or power supply board.

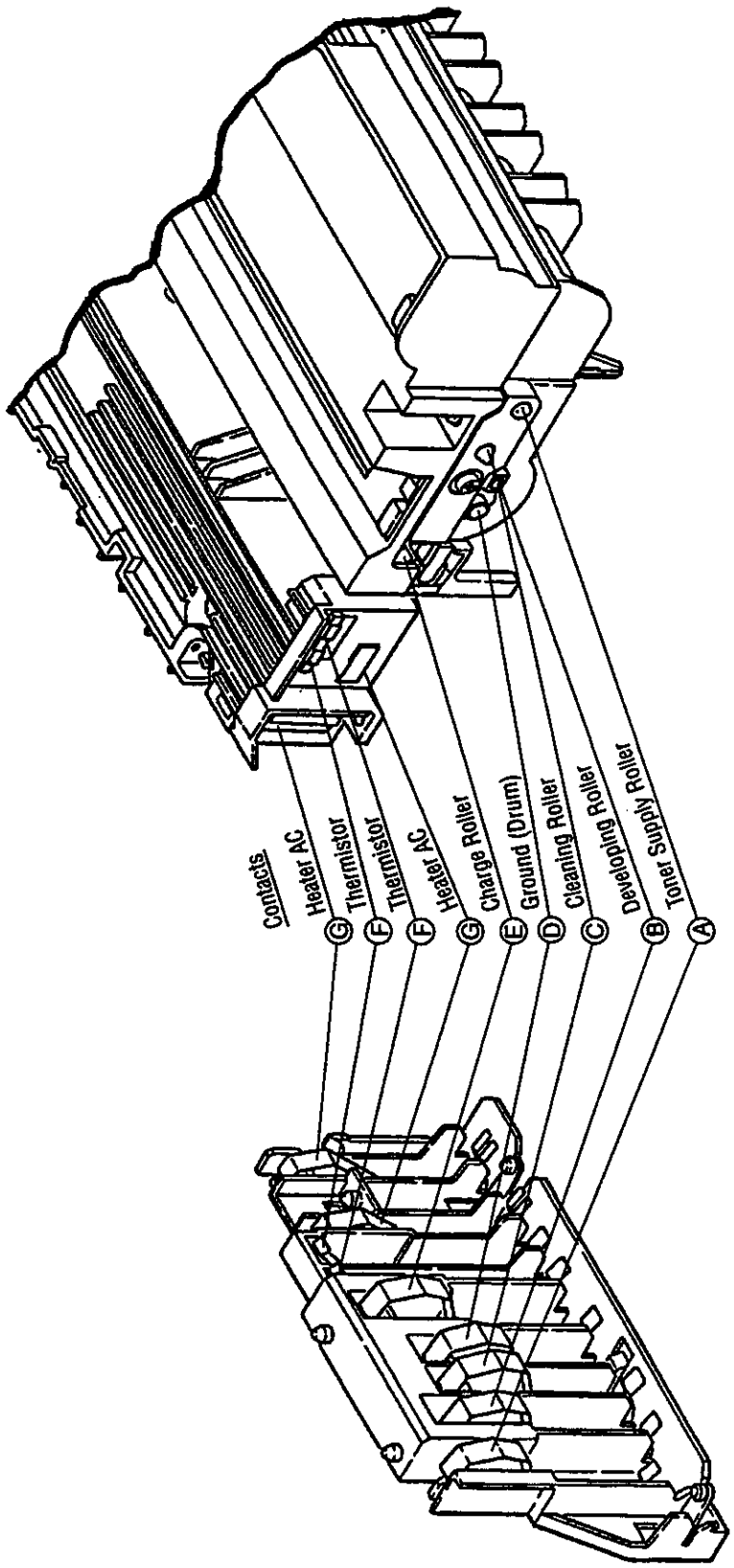

Contacts
Heater AC
Thermistor
Thermistor
Heater AC
Charge Roller
Ground (Drum)
Cleaning Roller
Developing Roller
Toner Supply Roller
G
F
F
G
E
D
C
B
A

Figure 6-4

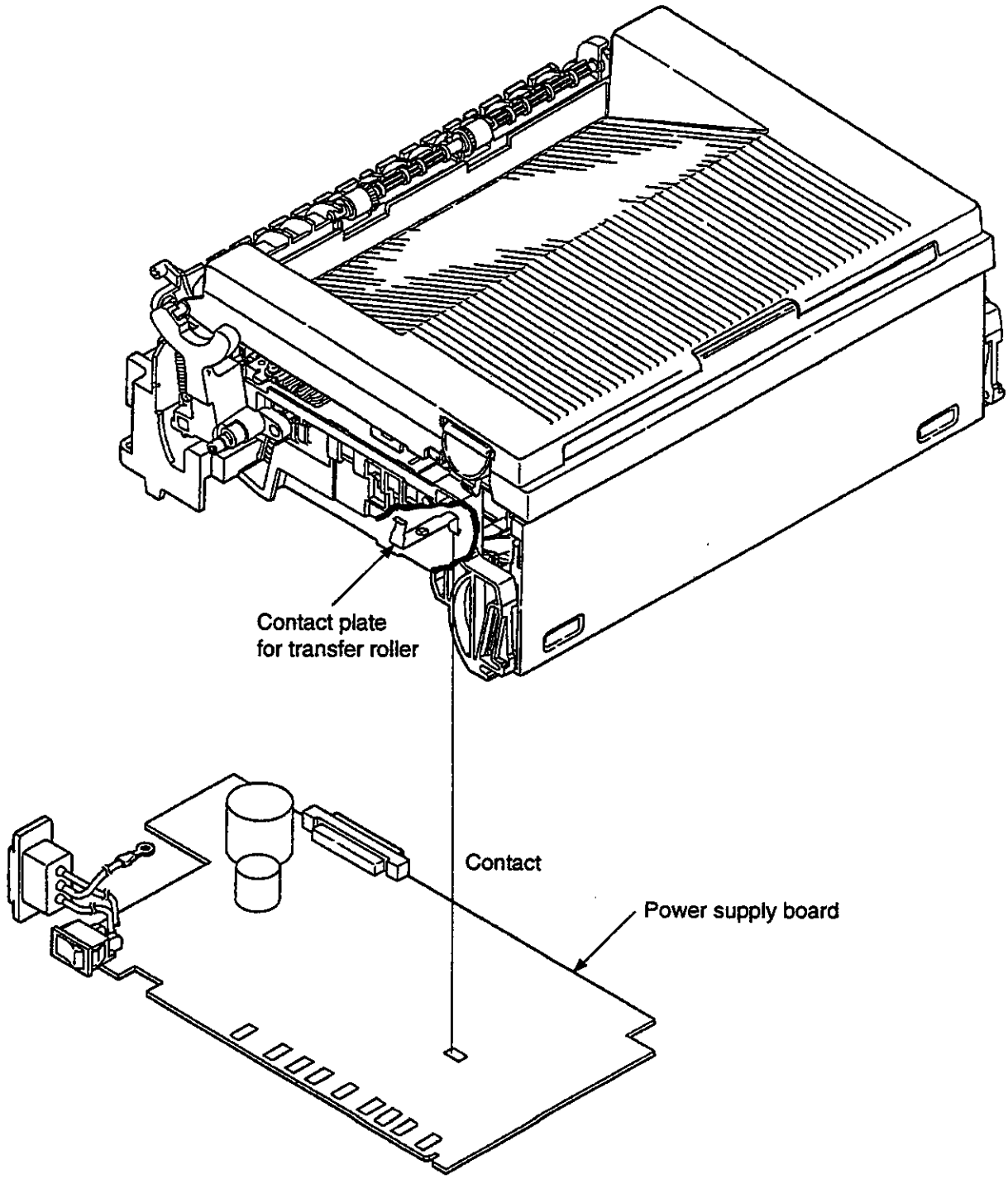
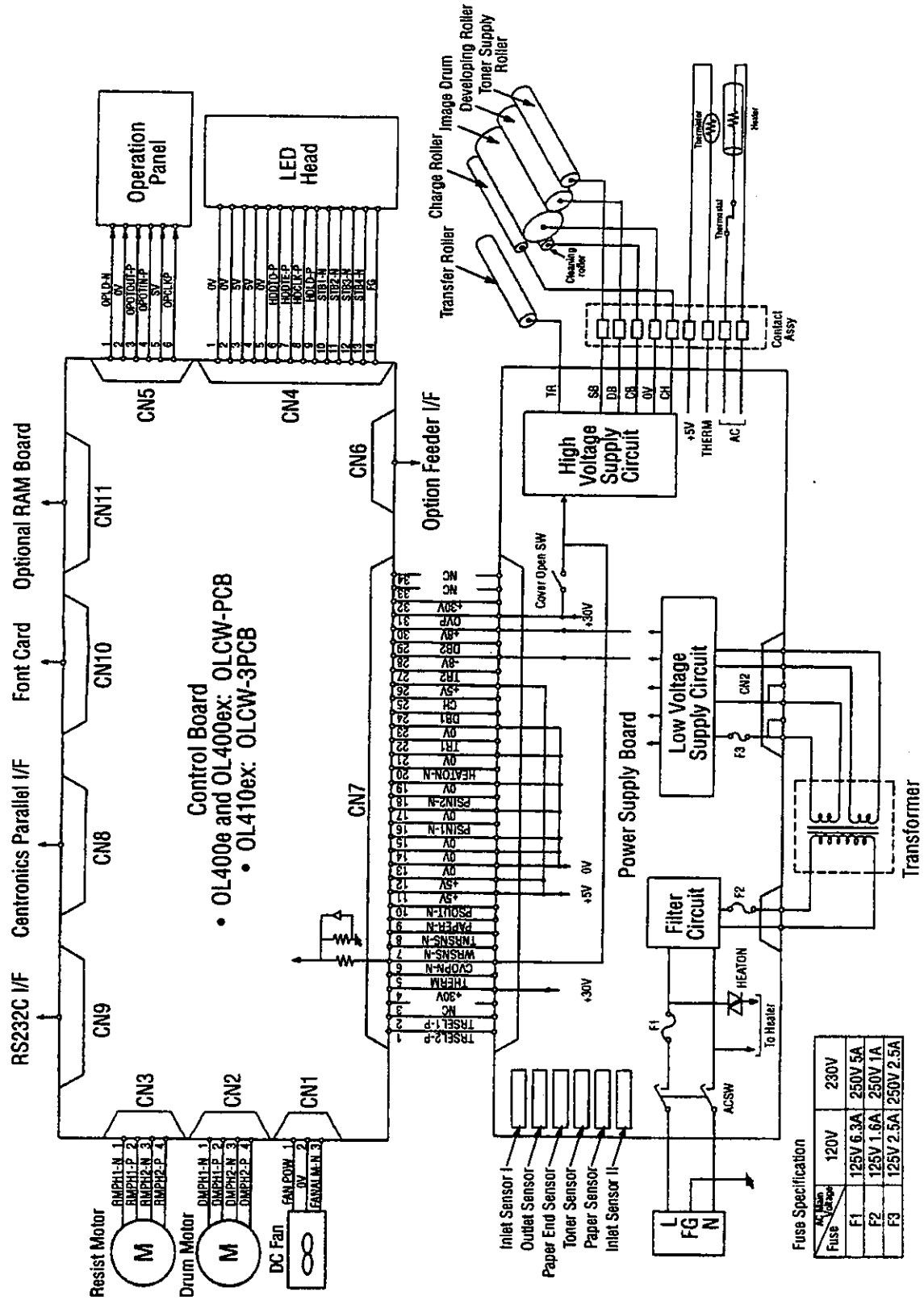

Contact plate
for transfer roller
Contact
Power supply board

Figure 6-5

7. WIRING DIAGRAM

7. WIRING DIAGRAM

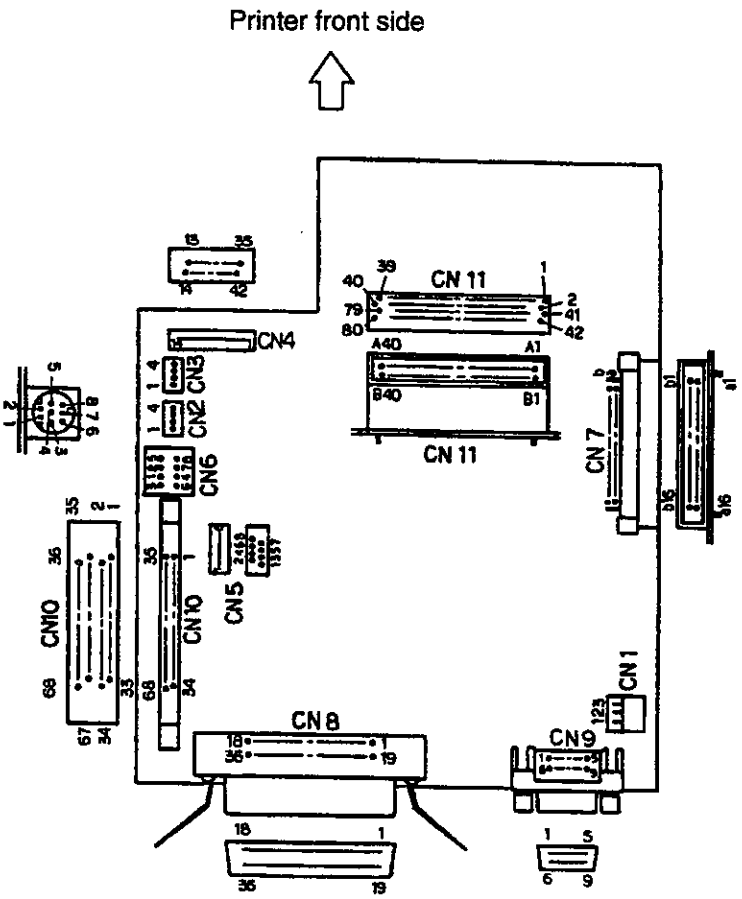
7.1 Interconnect Signal Diagram

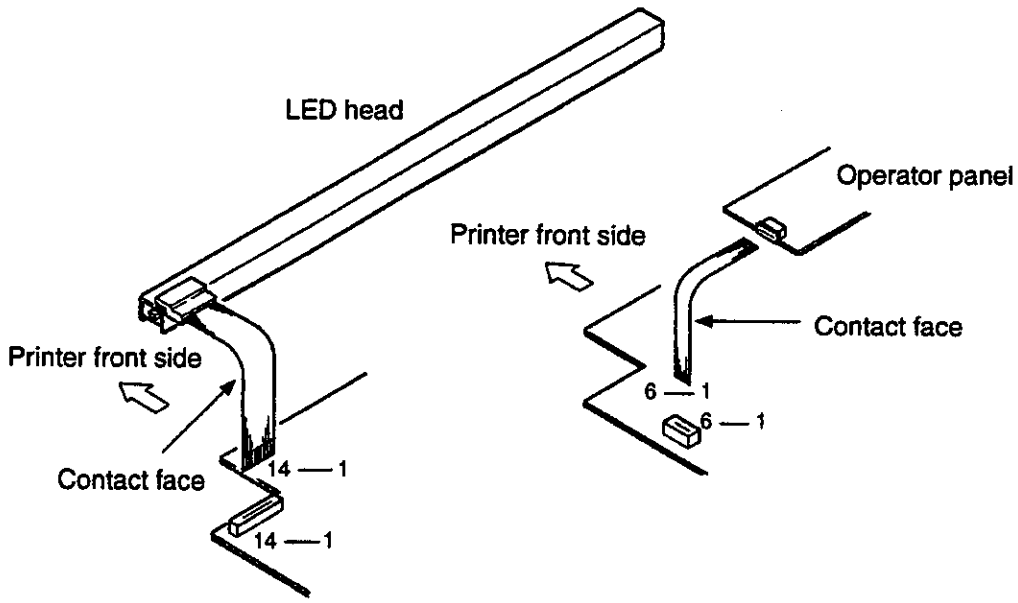


7.2 PCB Layout and Connector Signal List

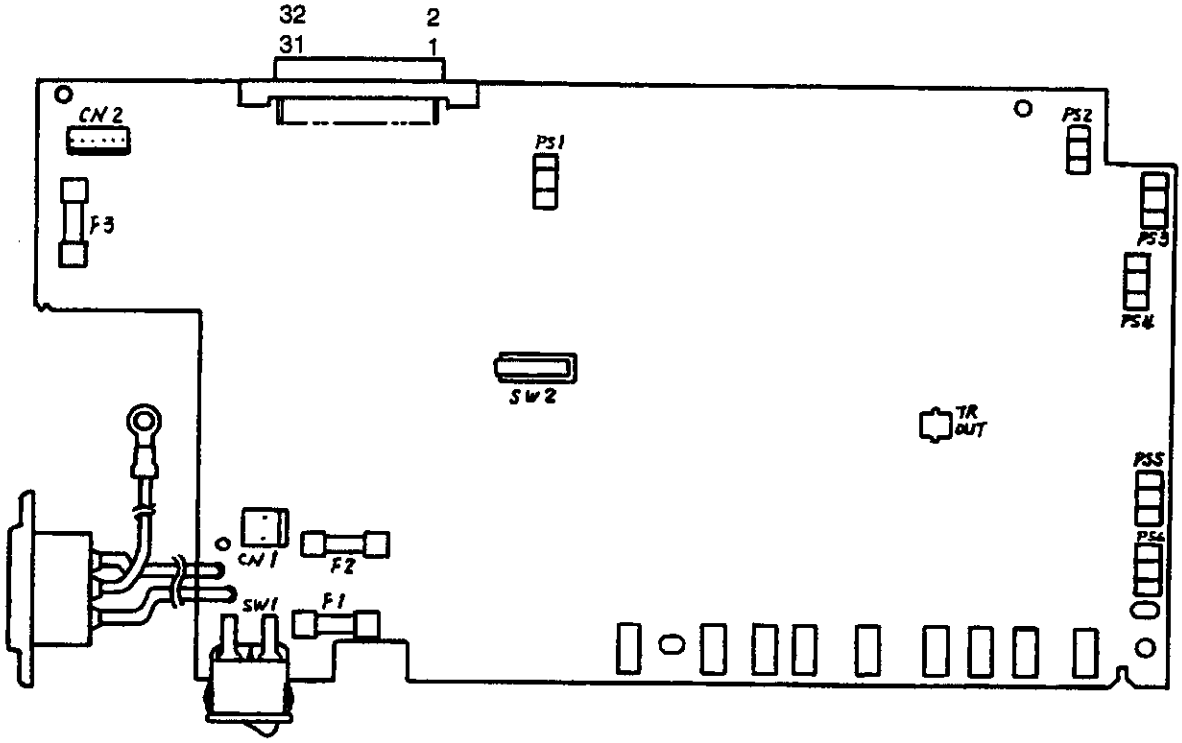
(1) Control Board

- OL400e and OL400ex: OLCW-PCB
- OL410ex: OLCW-3 PCB





(2) Power Supply Board



- CN1 Pin Assignment
  To Fan motor

Opening	1
	2
	3

Pin No.	I/O	Signal	Description
1	O	FANPOW	Power supply for fan driving
2	C	0V	Ground
3	I	FANALM-N	Fan alarm

- CN2 Pin Assignment
  To Drum motor

	Pin No.	I/O	Signal	Description
1	1	O	DMPH1-N	Coil 1-N
2	2	O	DMPH1-P	Coil 1-P
3	3	O	DMPH2-N	Coil 2-N
4	4	O	DMPH2-P	Coil 2-P

Excitation sequence

Pin No.	Line Color	Step No.			
		1	2	3	4
2	Yellow	+	-	-	+
4	Black	+	+	-	-
1	Orange	-	+	+	-
3	Brown	-	-	+	+

Rotary direction Clockwise wiewed from the output axis.

- CN3 Pin Assignment
  To Regist motor

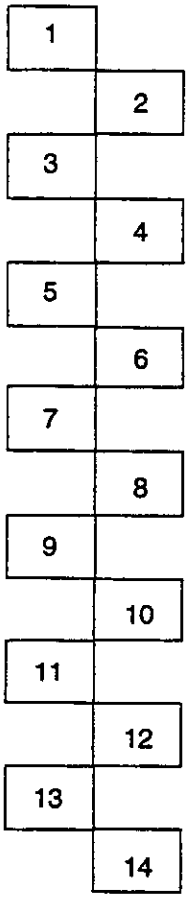
	Pin No.	I/O	Signal	Description
1	1	O	RMPH1-N	Coil 1-N
2	2	O	RMPH1-P	Coil 1-P
3	3	O	RMPH2-N	Coil 2-N
4	4	O	RMPH2-P	Coil 2-P

Excitation sequence

Pin No.	Line color	Step No.			
		1	2	3	4
2	Yellow	+	-	-	+
4	Black	+	+	-	-
1	Orange	-	+	+	-
3	Brown	-	-	+	+

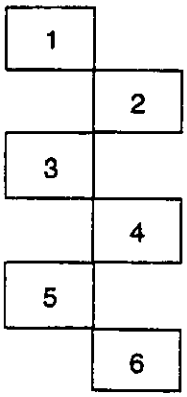
Rotary direction Clockwise wiewed from the output axis.

- CN4 Pin Assignment
  To LEDhead



Pin No.	I/O	Signal	Description
1	C	0V	Ground for LED
2	C	0V	Ground for LED
3	O	5V	+5V power supply for LED driving
4	O	5V	+5V power supply for LED driving
5	C	0V	Logic ground
6	O	HDDTO-P	Data
7	O	NC	Not used
8	O	HDCLK-P	Clock
9	O	HDLD-P	Load
10	O	STB1-N	Strobe 1
11	O	STB2-N	Strobe 2
12	O	STB3-N	Strobe 3
13	O	STB4-N	Strobe 4
14	C	FG	FG

- CN5 Pin Assignment
  To Operator panel



Pin No.	I/O	Signal	Description
1	O	OPLD-N	Load
2	C	0V	Logic groud
3	O	OPDTOUT-P	Data output
4	I	OPDTIN-P	Data input
5	C	5V	+5V power supply
6	O	OPCLK-N	Clock

- CN6 Pin Assignment
  To Option feeder

5	8
2	7
1	4
3	6

Pin No.	I/O	Signal	Description
1	O	OPTPSIN-N	Paper sense 1
2	O	OPTSCLK-N	Clock
3	C	OPTSD-P	Data
4	I	OPTSDR-N	OPT send data ready
5	C	0VP	Analog ground
6	O	30V	+30V power supply
7	C	0V	Logic gound
8	O	5V	+5V power supply

- CN7 Pin Assignment

2	1
4	3
6	5
8	7
10	9
12	11
14	13
16	15
18	17
20	19
22	21
24	23
26	25
28	27
30	29
32	31

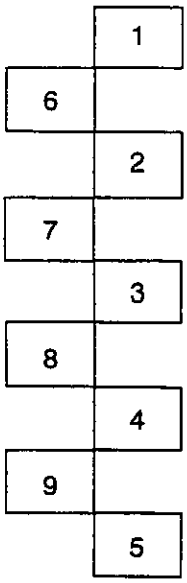
Pin No.	Signal	I/O	Description	Pin No.	Signal	I/O	Description
2 (b01)	TRSEL1-P	O	TR control switch 1	1 (a01)	TRSEL2-F	O	TR control switch 2
4 (b02)	+30V	I	+30V power supply	3 (a02)	NC		
6 (b03)	CVOPN-N	I	Cover open (+30V)	5 (a03)	THERM	I	Heater temperature
8 (b04)	TRSNS-N	I	Toner sense 1	7 (a04)	WRSNS-N	I	Write sensor
10 (b05)	PSOUT-N	I	Paper sense (output)	9 (a05)	PAPER-N	I	Paper end
12 (b06)	+5V	I	+5V power supply	11 (a06)	+5V	I	+5V power supply
14 (b07)	0V	C	Logic ground	13 (a07)	0V	C	Logic ground
16 (b08)	PSIN1-N	I	Paper sense 1 (input)	15 (a08)	0V	C	Logic ground
18 (b09)	PSIN2-N	I	Paper sense 2 (broad width)	17 (a09)	0V	C	Logic ground
20 (b10)	HEATON-N	O	Heater on	19 (a10)	0V	C	Logic ground
22 (b11)	R1-P	O	TR on (+ output)	21 (a11)	0V	C	Logic ground
24 (b12)	DON1-P	O	DB/SB on (+ output)	23 (a12)	0V	C	Logic ground
26 (b13)	+5	I	+5V power supply	25 (a13)	CH-P	O	Charge on
28 (b14)	-8V	I	-8V power supply	27 (a14)	TR2-P	O	TR on (- output)
30 (b15)	+8V	I	+8V power supply	29 (a15)	DBON2-P	O	DB/SB on (- output)
32 (b16)	+30V	I	+30V power supply	31 (a16)	0VP	C	Analog ground

- CN8 Pin Assignment
  CENTRO PARALLEL

1	19
2	20
3	21
4	22
5	23
6	24
7	25
8	26
9	27
10	28
11	29
12	30
13	31
14	32
15	33
16	34
17	35
18	36

Pin No.	I/O	Signal	Description	Pin No.	I/O	Signal	Description
1	I	STROBE-N	Strobe	19	C	SG	Ground
2	C	DATA1-P	Data bit 0	20	C	SG	Ground
3	C	DATA2-P	Data bit 1	21	C	SG	Ground
4	C	DATA3-P	Data bit 2	22	C	SG	Ground
5	C	DATA4-P	Data bit 3	23	C	SG	Ground
6	C	DATA5-P	Data bit 4	24	C	SG	Ground
7	C	DATA6-P	Data bit 5	25	C	SG	Ground
8	C	DATA7-P	Data bit 6	26	C	SG	Ground
9	C	DATA8-P	Data bit 7	27	C	SG	Ground
10	O	ACK-N	Acknowledge	28	C	SG	Ground
11	O	BUSY-P	Busy	29	C	SG	Ground
12	O	PE-P	paper end	30	C	SG	Ground
13	O	SEL-P	Select	31	I	IPRIME-N	Input prime
14	I	AUTOFEED-N	Auto feed	32	O	FAULT-N	Fault
15		NC		33	C	SG	Ground
16	C	SG	Ground	34		NC	
17	C	FG		35	O	HILEVEL	Always kept high
18	O	5V	+5V power supply	36	I	SELIN-N	Select in

- CN9 Pin Assignment
  RS232C

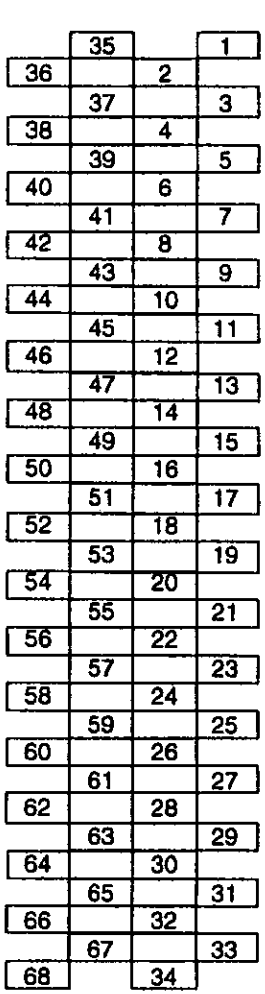


Pin No.	I/O	Signal	Description
1		CD	Connected to 0V via resistance (5.6K)
2	I	RxD	Receive data
3	O	TxD	Send data
4	O	DTR	Data terminal ready
5	C	SG	Ground
6	I	DSR	Connected to 0V via resistance (5.6K)
7	O	RTS	Request to send
8	I	CTS	Connected to 0V via resistance (5.6K)
9		NC	

Note: Cross connection is applied to the host system.

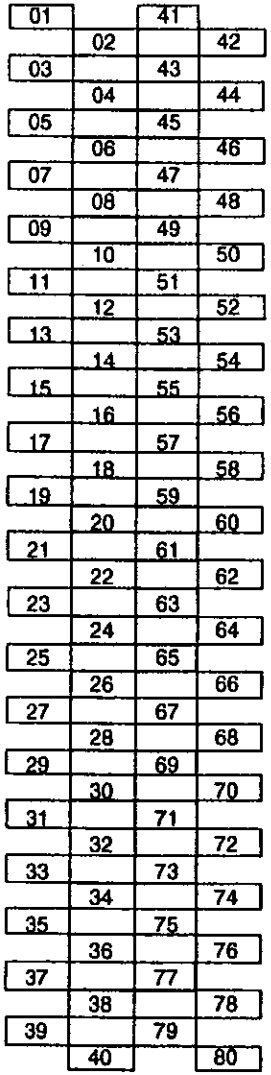
Host (9 male pin)		Printer (female pin)	
(I) CD	1	1	CD (I)
(I) RxD	2	2	RxD (I)
(O) TxD	3	3	TxD (O)
(O) DTR	4	4	DTR (O)
SG	5	5	SG
(I) DSR	6	6	DSR (I)
(O) RTS	7	7	RTS (O)
(I)CTS	8	8	CTS (I)
(I)RI	9	9	NC

- CN10 Pin Assignment
  To Font card

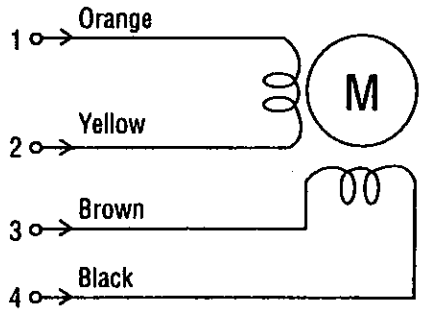
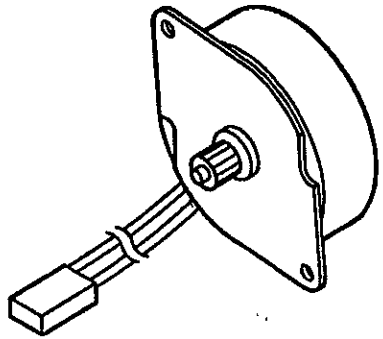
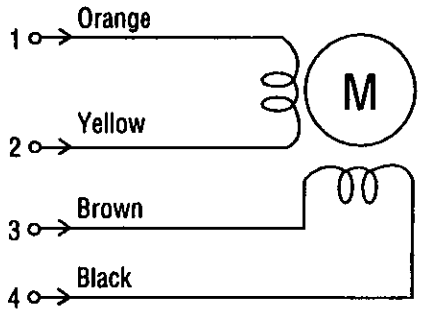
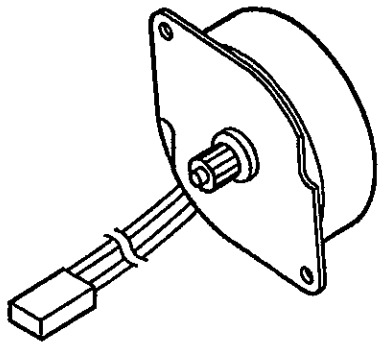
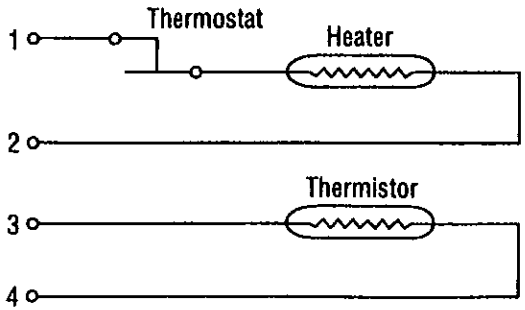
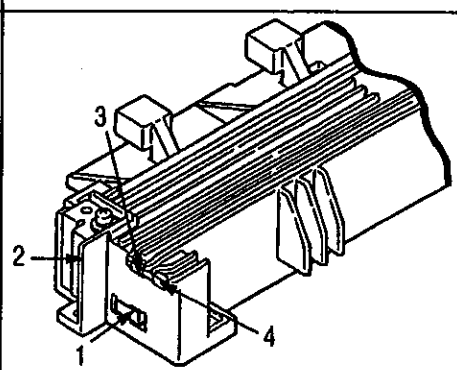


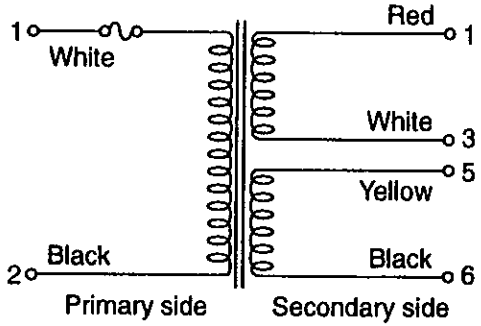
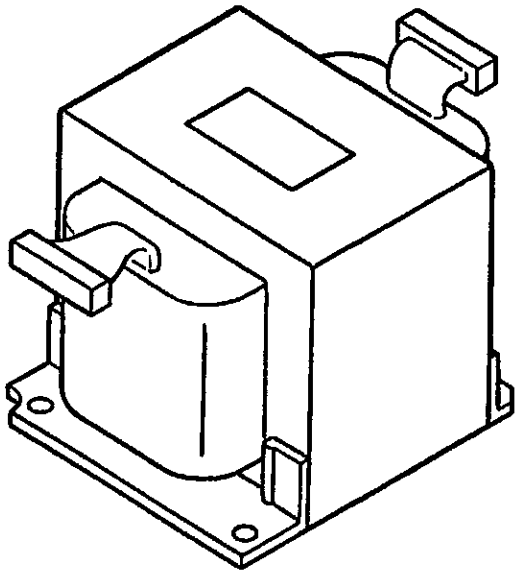
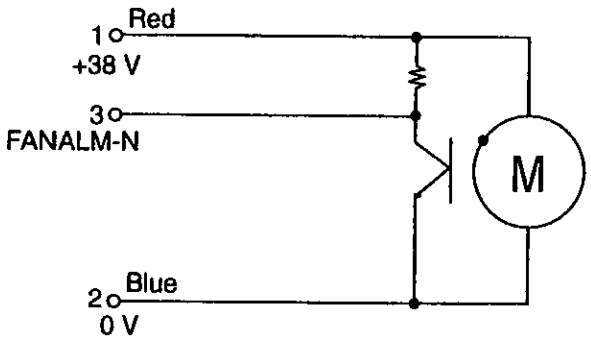
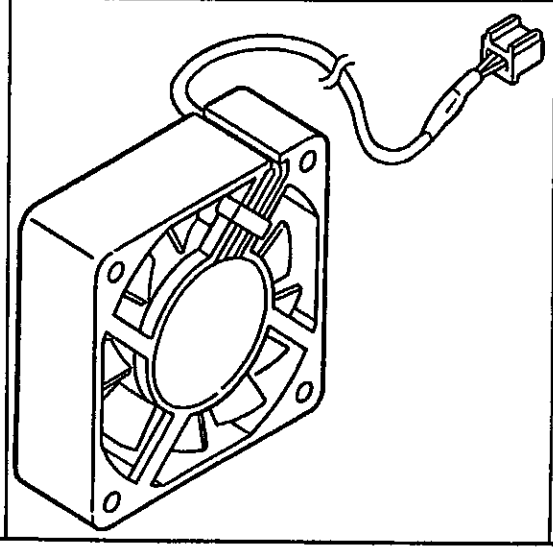
Pin No.	I/O	Signal	Description	Pin No.	I/O	Signal	Description
1	C	GND	Ground	35	C	GND	Ground
2	C	D03-P	Data bit 3	36	I	CD1-N	Card detection
3	C	D04-P	Data bit 4	37	C	D11-P	Data bit 11
4	C	D05-P	Data bit 5	38	C	D12-P	Data bit 12
5	C	D06-P	Data bit 6	39	C	D13-P	Data bit 13
6	C	D07-P	Data bit 7	40	C	D14-P	Data bit 14
7	O	CE1-N	Card enable	41	C	D15-P	Data bit 15
8	O	A10-P	Address bit 10	42	O	CE2-N	Card enable
9	O	OE-N	Output enable	43	O	RFSH-N	Not connected
10	O	A11-P	Address bit 11	44		RFU	Not connected
11	O	A09-P	Address bit 9	45		RFU	Not Connected
12	O	A08-P	Address bit 8	46	O	A17-P	Address bit 17
13	O	A13-P	Address bit 13	47	O	A18-P	Address bit 18
14	O	A14-P	Address bit 14	48	O	A19-P	Address bit 19
15	O	WE-N/PGM-N	Write enable	49	O	A20-P	Address bit 20
16	I	RDY/BSY-N	Not connected	50	O	A21-P	Address bit 21
17	O	VCC	+5V power supply	51	O	VCC	+5V power supply
18	O	VPP1	Not connected	52	O	VPP2	Not connected
19	O	A16-P	Address bit 16	53	O	A22-P	Address bit 22
20	O	A15-P	Address bit 15	54	O	A23-P	Address bit 23
21	O	A12-P	Address bit 12	55	O	A24-P	Address bit 24
22	O	A07-P	Address bit 7	56	O	A25-P	Address bit 25
23	O	A06-P	Address bit 6	57		RFU	Not connected
24	O	A05-P	Address bit 5	58		RFU	Not connected
25	O	A04-P	Address bit 4	59		RFU	Not connected
26	O	A03-P	Address bit 3	60		RFU	Not connected
27	O	A02-P	Address bit 2	61	O	REG-N	Selection of attribute memory
28	O	A01-P	Address bit 1	62	I	BVD2	Pull-up to +5V
29	O	A00-P	Not connected	63	I	BVD1	Pull-up to +5V
30	C	D00-P	Data bit 0	64	C	D08-P	Data bit 8
31	C	D01-P	Data bit 1	65	C	D09-P	Data bit 9
32	C	D02-P	Data bit 2	66	C	D10-P	Data bit 10
33	I	WP-P	Not connected	67	I	CD2-N	Card detection
34	C	GND	Ground	68		GND	Ground

- CN11 Pin Assignment
  To Option board



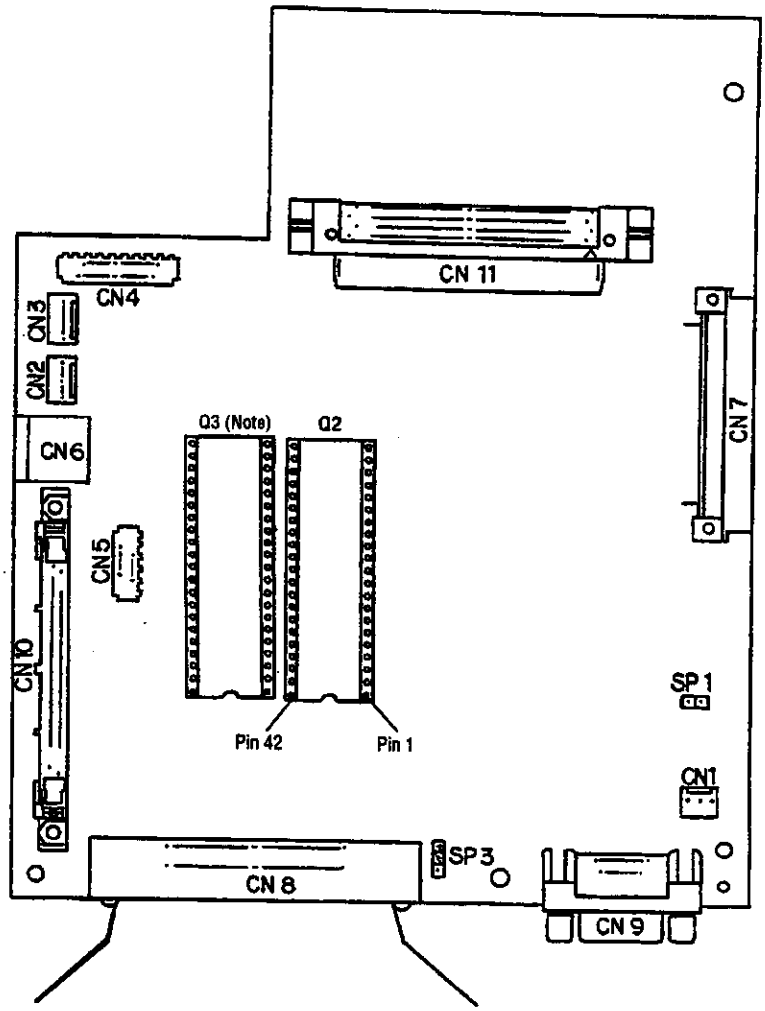
Pin No.	I/O	Signal	Description	Pin No.	I/O	Signal	Description
01	O	-8V	-8V power supply	41	O	0V	Logic ground
02	C	0V	Logic ground	42		0V	Logic ground
03		0V	Logic ground	43	C	SSTXD-P	EEPROM data
04	I	NC		44	O	EEPRMCLK-P	EEPROM clock
05	O	NC		45	O	EEPRMCS1-P	EEPROM select
06		0V	Logic ground	46	O	+5V	+5V power supply
07		0V	Logic ground	47	I	INT2-N	Interrupt request 2
08	I	INT1-N	Interrupt request 1	48	O	IOS1-N	I/O select 1
09	O	IOS0-N	I/O select 0	49	O	CS3-N	ROM/SRAM select 3
10	O	CS2-N	ROM/SRAM select 2	50	I	BREO-N	Bus request
11	O	BGNT-P	Bus grant	51	O	NC	
12	I	DRDY-N	Data read	52	O	RESET-N	Reset signal
13	I	SCSREO-P	SCC receive request	53		NC	
14	I	SCRREO-P	SCC send request	54		NC	
15	O	A08-P	Address bit 8	55	O	A07-P	Address bit 7
16	O	A06-P	Address bit 6	56	O	A05-P	Address bit 5
17	O	A04-P	Address bit 4	57	O	A03-P	Address bit 3
18	O	A02-P	Address bit 2	58	O	A01-P	Address bit 1
19	O	A00-P/ORE-N	OR write enable	59	O	A21-P	Address bit 21
20	O	A20-P	Address bit 20	60	O	A19-P	Address bit 19
21	O	A17-P	Address bit 17	61	O	DCAS0-N	DCAS0
22	O	DCAS1-N	DCAS1	62	O	RD-N	RD-N
23	O	A18-P	Address bit 18	63	O	A16-P	Address bit 16
24	O	A15-P	Address bit 15	64	O	A14-P	Address bit 14
25	O	A13-P	Address bit 13	65	C	0V	Logic ground
26	O	+5V	+5V power supply	66	O	A12-P	Address bit 12
27	O	A11-P	Address bit 11	67	O	A10-P	Address bit 10
28	O	A09-P	Address bit 9	68	O	WR-N	WR-N
29	O	DRAS2-N	DRAM select 2	69	O	DRAS3-N	DRAM select 3
30	C	DRAN4-N	DRAM select 4	70	O	DRAS5-N	DRAM select 5
31	C	D07-P	Data bit 7	71	C	D06-P	Data bit 6
32	C	D05-P	Data bit 5	72	C	D04-P	Data bit 4
33	C	D02-P	Data bit 2	73	C	D03-P	Data bit 3
34	C	D00-P	Data bit 0	74	C	D01-P	Data bit 1
35		0V	Logic ground	75		+5V	+5V power supply
36	C	D14-P	Data bit 14	76	C	D15-P	Data bit 15
37	C	D12-P	Data bit 12	77	C	D13-P	Data bit 13
38	C	D11-P	Data bit 11	78	C	D10-P	Data bit 10
39	C	D09-P	Data bit 9	79	C	D08-P	Data bit 8
40	I	OPTION-N	Option board detection	80		0V	Logic ground

Unit	Circuit Diagram	Illustration	Resistance
Resist motor			Between pins 1 and 2: 32Ω Between pins 3 and 4: 32Ω
Drum motor			Between pins 1 and 2: 32Ω Between pins 3 and 4: 32Ω
Fusing Unit			Between pins 1 and 2: 120V 3Ω 240V 10Ω Between pins 3 and 4: 220KΩ (at room temperature)

Unit	Circuit Diagram	Illustration	Resistance
Transformer			Primary side Between pins 1 and 2: 56.8Ω (OEL) 14.8Ω (ODA) Secondary side Between pins 1 and 3: 1.3Ω Between pins 5 and 6: 1.2Ω
Fan			Between pins 1 and 2: 670Ω

7.4 Short Plug Setting

(1) Control Board
- OL400e and OL400ex: OLCW-PCB
- OL410ex: OLCW-3 PCB



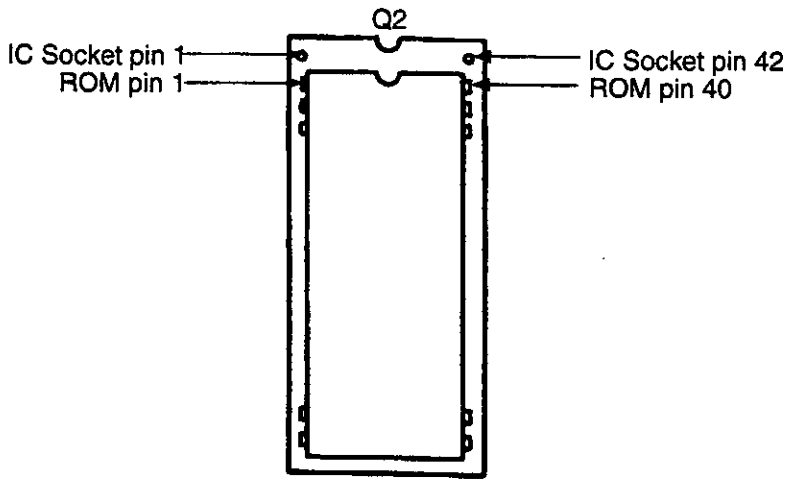
NOTE: Q3 is mounted on OLCW-3 PCB only.

- Short plug settings

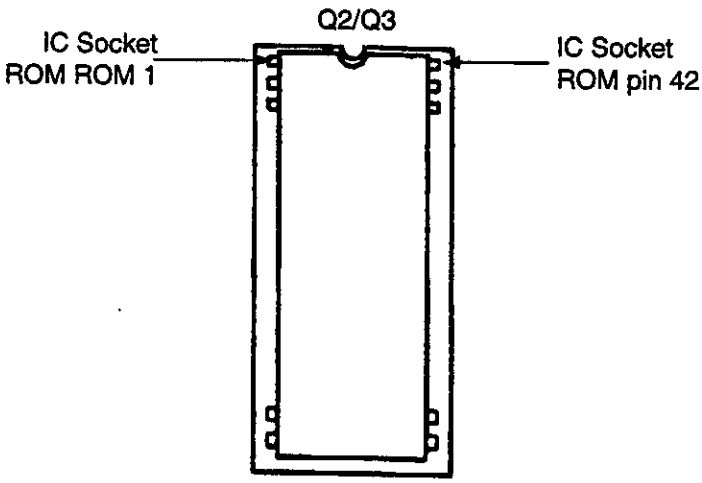
Short plug	Plug setting	Description	Factory setting
SP1	Provided	Debug mode	Not Provided
	Not provided	Normal	
SP3	A	+5 V is supplied to pin 18 of Centronics parallel I/F connector.	Aside
	B	+5 V is not supplied to pin 18 Centronics parallel I/F connector.	

- ROM Mounting Method

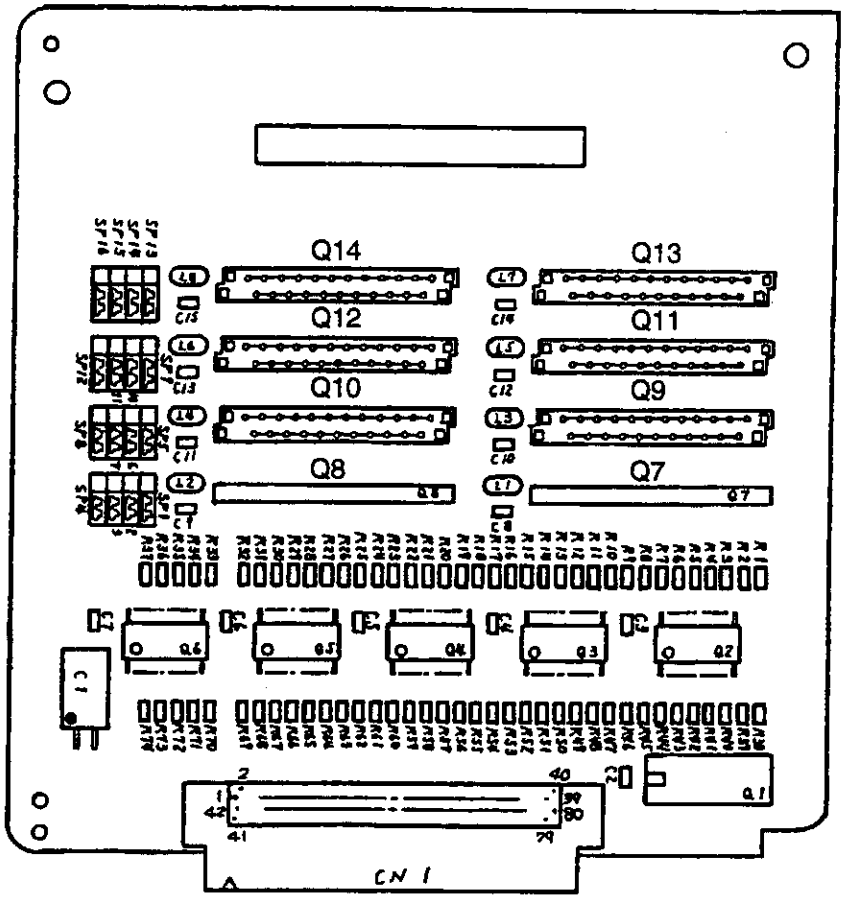
  a. 4M bit EEPROM ROM and Mask ROM (OL400e)



  b. 8M bit Mask ROM (Q2 for OL400ex, Q3 for OL410ex)
  16M bit Mask ROM (Q2 for OL410ex)



(2) Optional RAM Board (OLCB-)



The expansion memory capacity of the standard board is 1MB (4M bit D-RAM x 2 pcs).

Note: Each stack uses a pair of RAM chips, so that the same type of RAM should be installed in the same stack.

	RAM Mounted
1M	Q7, Q8
2M	Q7, Q8, Q13, Q14
3M	Q7, Q8, Q11, Q12, Q13, Q14
4M	Q7, Q8, Q9, Q10, Q11, Q12, Q13, Q14

8. PARTS LIST

8. PARTS LIST

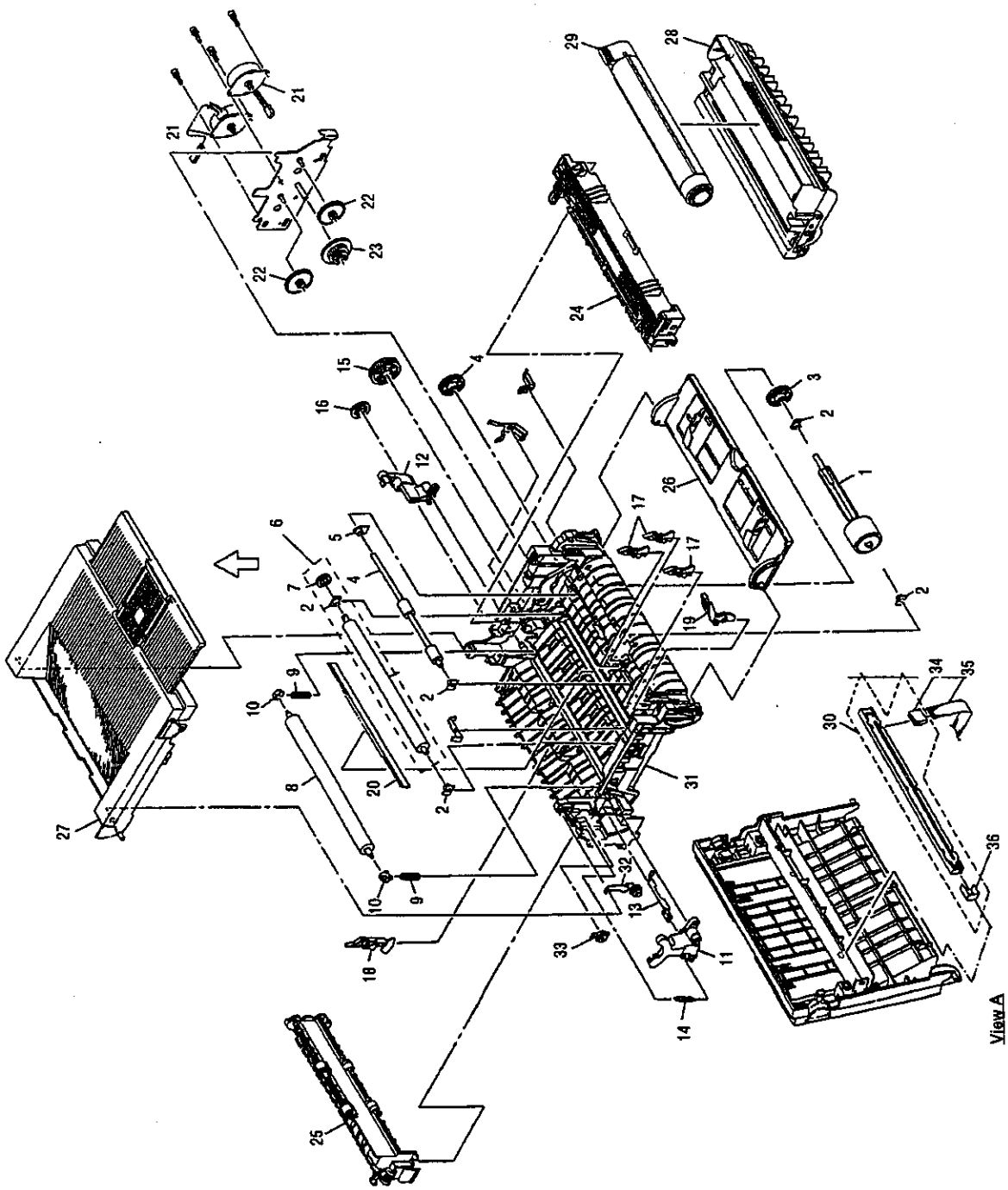


Figure 8-1 Lower Base Unit

Table 8-1 Lower base unit

No.	Name/Rating	Parts No.	Use			Remarks
			OL400e	OL400ex	OL410ex	
1	Hopping roller shaft assy	3PA4083-6019G1	1	1	1	
2	Bearing	4PP4083-6022P2	5	5	5	
3	One-way clutch gear	4PB4083-6024P1	2	2	2	
4	Resist roller	3PB4083-6030P1	1	1	1	
5	Bearing (Resist)	4PP4083-6031P1	1	1	1	
6	Transfer roller assy	3PA4083-6246G1	1	1	1	
7	TR gear	4PP4083-6042P2	1	1	1	
8	Back-up roller	3PB4083-6050P1	1	-	-	Use for Products before S/N 303Axxxxx.
		3PB4083-6064P1	1	1	1	Use for Products S/N 304Axxxxx and after.
9	Bias spring	4PP4083-6051P1	2	-	-	Use for Products before S/N 303Axxxxx.
		4PP4083-6065P1	2	2	2	Use for Products S/N 304Axxxxx and after.
10	Bush	4PP4083-6052P1	2	2	2	
11	Reset lever L	3PK4083-6810P1	1	-	-	Use for Products before S/N 303Axxxxx.
		3PP4083-6053P1	1	1	1	Use for Products S/N 304Axxxxx and after.
12	Reset lever R	3PK4083-6811P1	1	-	-	Use for Products before S/N 303Axxxxx.
		3PP4083-6054P1	1	1	1	Use for Products S/N 304Axxxxx and after.
13	Switch arm	3PP4083-6058P1	1	1	1	
14	Reset spring	4PP4083-6057P1	1	1	1	
15	Idle gear	4PP4083-6080P1	1	1	1	
16	Idle gear	4PP4083-6081P1	1	1	1	
17	Sensor plate (inlet, paper)	4PP4083-6083P1	3	3	3	
18	Sensor plate (outlet)	4PP4083-6025G1	1	1	1	
19	Toner sensor (adhesion)	4PP4083-6086G1	1	1	1	
20	Diselectrification bar	4PB4083-3182P3	1	1	1	
21	Stepping motor	4PB4083-6075P1	2	2	2	
22	Idle gear A	4PP4083-2593P1	2	2	2	
23	Reduction gear	3PP4083-6076P1	1	1	1	
24	Fusing unit (230V)	2YX4083-6100G2	1	1	1	
25	Eject roller assy	2PA4083-6120G1	1	1	1	
26	Manual feed guide assy	2PA4083-6130G1	1	1	1	
27	Stacker cover assy	2PA4083-6160G1	1	1	1	
28	I/D unit	4YA4083-6300G3	1	1	1	Consumable
29	Toner cartridge	4YA4083-6400G3	1	1	1	Consumable
30	LED head	3YX4083-6245G1	1	1	1	

No.	Name/Rating	Parts No.	Use			Remarks
			OL400e	OL400ex	OL410ex	
31	Lower base	2PP4083-6801G1	1	1	1	
32	Dumper arm (caulking)	4PP4083-6191G1	1	1	1	
33	Dumper	4PB4083-6197P1	1	1	1	
34	PC connector	224A1286P0140	1	1	1	
35	Flexible cable (LED head)	4YX4121-1025G1	1	1	1	
36	Contact (LED)	4PP4083-6173P1	1	1	1	

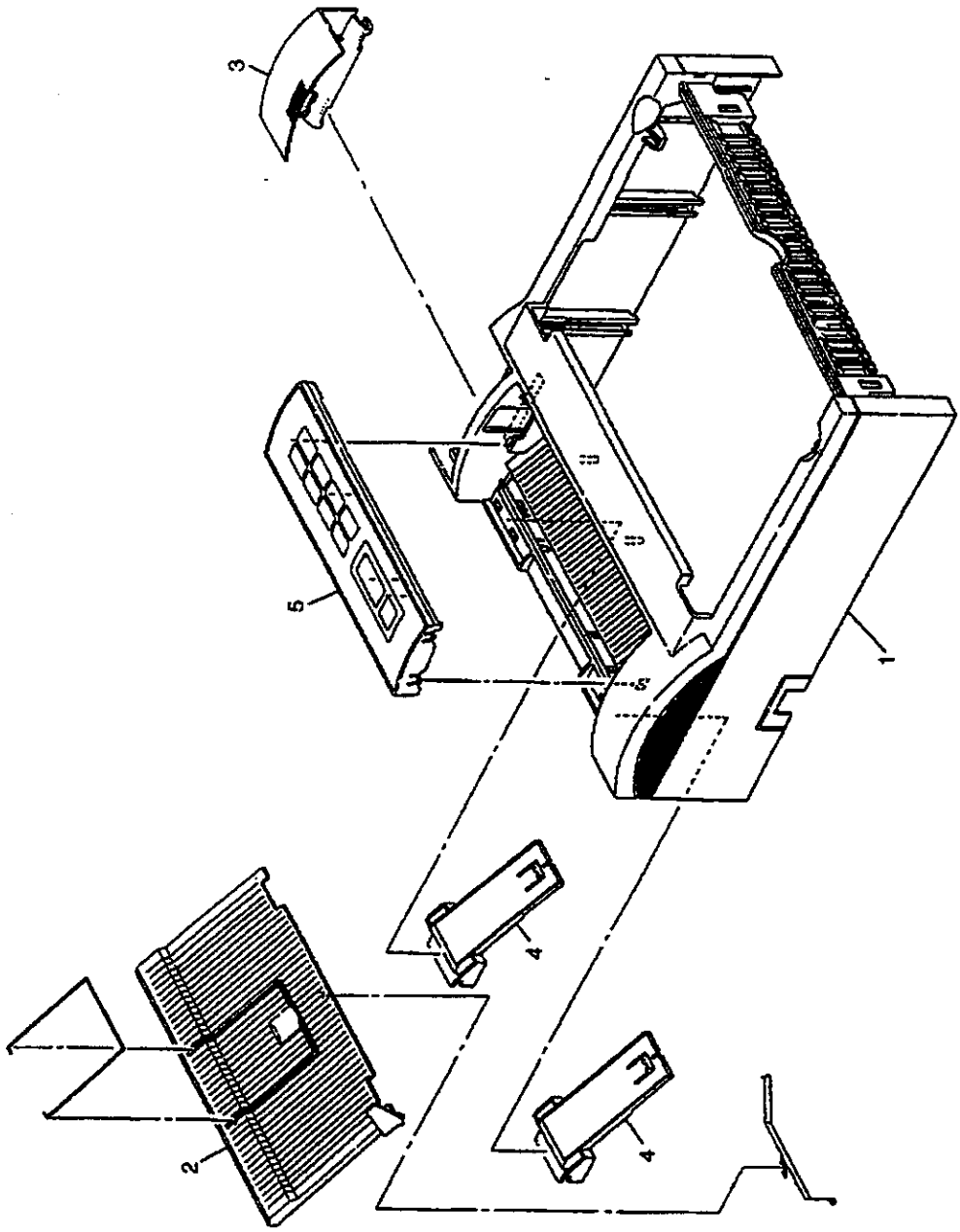


Figure 8-2 Upper cover unit

Table 8-2 Upper cover unit

No.	Name/Rating	Parts No.	Use			Remarks
			OL400e	OL400ex	OL410ex	
1	Upper cover	2PP4083-6808G1	1	1	1	
2	Stacker	1PP4094-7814P1	1	1	1	
3	Font card cover	2PP4094-7815P1	1	1	1	
4	Stacker clamp	3PP4094-7816P1	2	2	2	
5	Operator panel assy	4YA4083-6804G2	-	1	-	
	Operator panel assy	4YA4083-6804G5	-	-	1	
	Operator panel assy	4YA4083-6804G8	1	-	-	

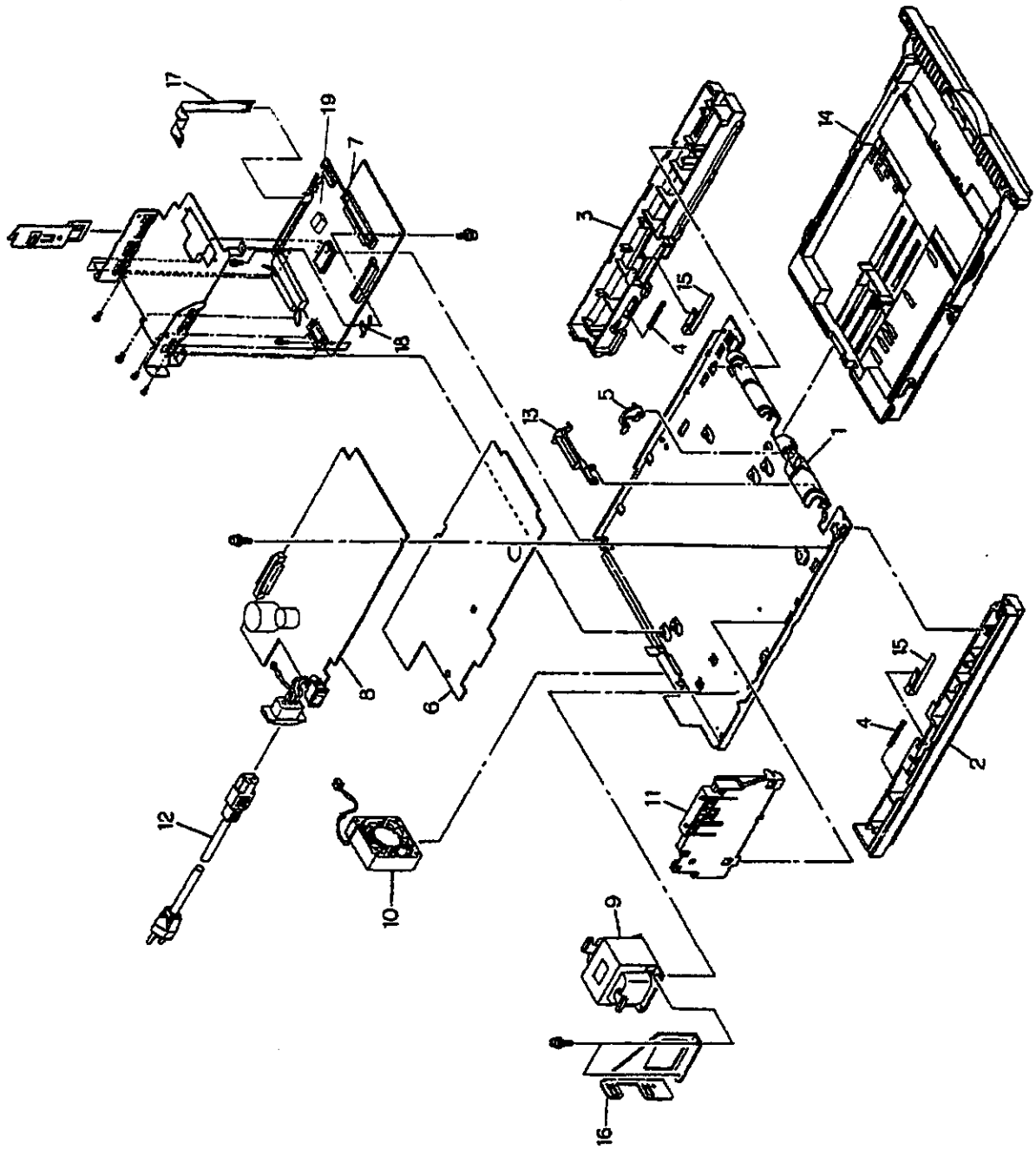


Figure 8-3 Base unit

Table 8-3 Base unit

No.	Name/Rating	Parts No.	Use			Remarks
			OL400e	OL400ex	OL410ex	
1	Base plate	2PP4083-6809G1	1	1	1	
2	Cassette guide L	3PP4083-6802G1	1	1	1	
3	Cassette guide R	3PP4083-6803G1	1	1	1	
4	Eject spring	4PP4083-6152P1	2	2	2	
5	Sensor plate (Paper end)	4PP4083-6082P1	1	1	1	
6	Insulator	3PB4083-6144P1	6	6	6	
7	Control board (OLCW-)	4YA4121-1007G11	1	1	-	
	Control board (OLCW-3)	4YA4121-1007G12	-	-	1	
8	Power supply board	4YA4049-7072G2	1	1	1	230V
9	Transformer	4YB4049-7033P1	1	1	1	230V
10	Fan motor	270A2165P0001	1	1	1	
11	Contact assy	3PA4083-6090G1	1	1	1	
12	AC cord (Continental)	3YS4011-1266P1	1	1	1	
	AC cord (U.K.)	3YS4011-1270P1	1	1	1	
	AC cord (Australia)	3YS4011-1329P2	1	1	1	
13	Cassette sensor plate	3PP4083-6154P1	1	1	1	
14	Paper cassette	1PA4083-6200G1	1	1	1	
15	Support spring	4PP4083-6153P1	2	2	2	
16	Inlet holder	4PP4083-6145P1	1	1	1	
17	Flexible cable (operator panel)	238A1071P0003	1	1	1	
18	Ground plate	4PP4083-6137P1	1	1	1	
19	EEPROM for control board	816A0303M0000	1	1	1	
	OLCB-PCB (RAM board)	4YA4121-1002G11	1	1	1	Option
	RAM chip set (1MB)	4YA4121-1008G1	1	1	1	Option

Appendix A RS-232C SERIAL INTERFACE

1) Connector

- Printer side : 9-pin plug
  Type DE-9P (made by Nihon Kouku Denshi) or equivalent
- Cable side : 9-pin receptacle
  Type DE-9S (made by Nihon Kouku Denshi)
  Shell
  Type DEU-9SF-FQ (made by Nihon Kouku Denshi) or equivalent

Note: Plug shall be securable with a lock screw.

2) Cable

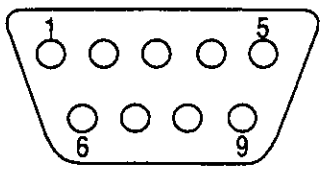
- Cable length: 6 ft (1.8 m) max. (cable shall be shielded.)

Note: Cable is not supplied.

3) Interface signal

Pin No.	Signal Name	Abbreviation	Signal Direction	Description
1	-			(Not used)
2	Received Data	RD	→ PR	Received data
3	Transmitted Data	TD	← PR	Transmitted data
4	Data Terminal Ready	DTR	← PR	Data terminal ready
5	Signal Ground	SG		Signal ground
6	-			(Not used)
7	Request To Send	RTS	← PR	Request To Send
8	-			(Not used)
9	-			(Not used)

- Connector Pin Arrangement



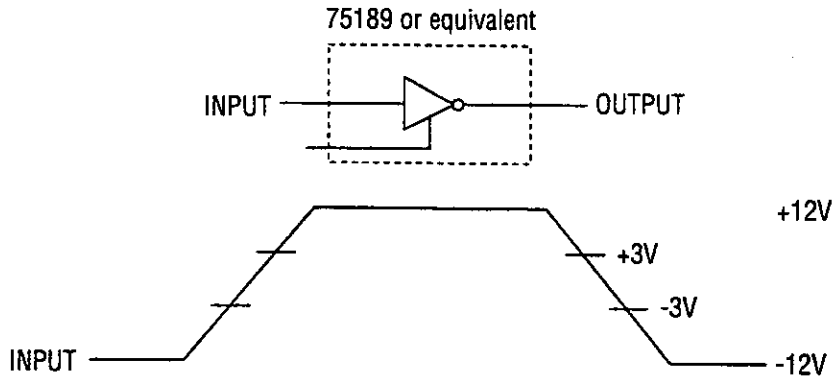
(As viewed from the cable side)

4) Signal Level

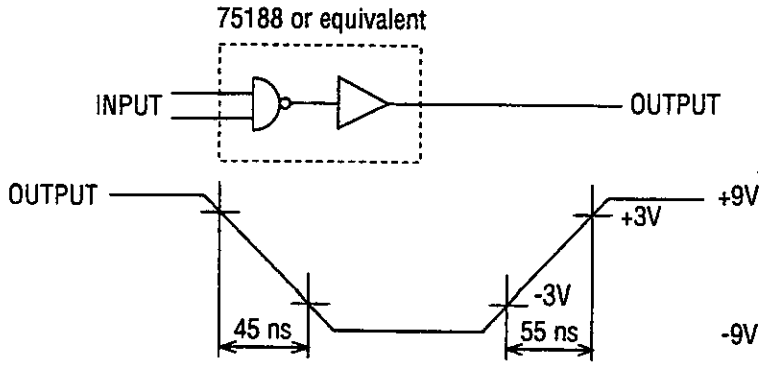
- MARK polarity : -3V to -15V (LOGIC = 1)
- SPACE polarity: +3V to +15V (LOGIC = 0)

5) Interface Circuit

a) Receiving Circuit



b) Sending Circuit



Note: The signal level above is for the case where 3K Ω x 15pF is connected to the terminal.

6) Receive Margin

37% min. at all reception rates.

7) Communications Protocol

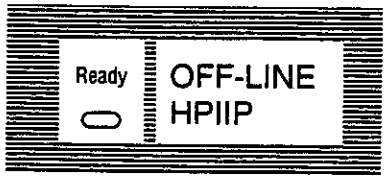
a) READY/BUSY protocol
b) X-ON/X-OFF protocol

8) Interface Parameter Setting

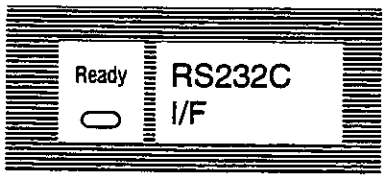
The following settings are possible by pressing ENTER/Copies key, after selecting the display contents of the LCD of the operator panel by using NEXT/Demo and LAST/Paper Size keys.

Settings are retained even when the printer power is turned off.

By pressing ON-LINE key, menu setting mode is completed and the printer returns to ON-LINE state.

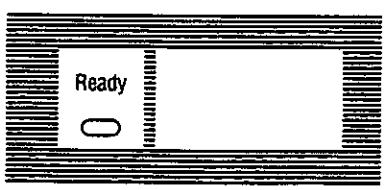


Keep MENU 1/Menu 2 key down for more than 2 seconds and bring the printer into menu setting mode (level 2). Next, press MENU 1/Menu 2 key 5 times.



"RS232C I/F" is displayed on the LCD.

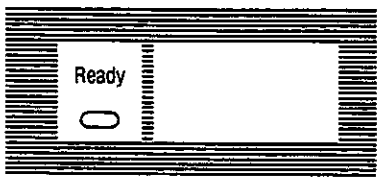
Press ENTER/Copies key.



Item	Flow CTL
Contents of Display	Function
DTR HI	SPACE-READY
DTR LO	MARK-READY
XONXOFF	
RBSTXON	Sending at intervals of 1 sec.

Factory Setting: DTR HI

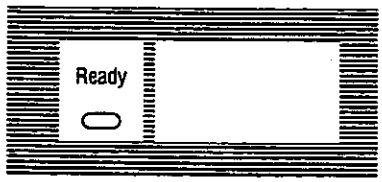
Press MENU 1 / Menu 2 key.



Item	Baud Rate
Contents of Display	Function
300	300 baud
600	600 baud
1200	1200 baud
2400	2400 baud
4800	4800 baud
9600	9600 baud
19200	19200 baud

Factory Setting: 9600 baud

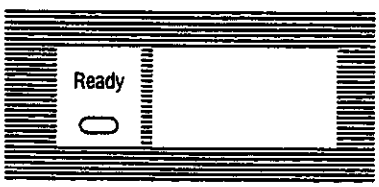
Press MENU 1 / Menu 2 key.



Item	Bit Length
Contents of Display	Function
8 BITS	8 bit
7 BITS	7 bit

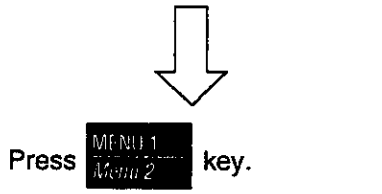
Factory Setting: 8 bit

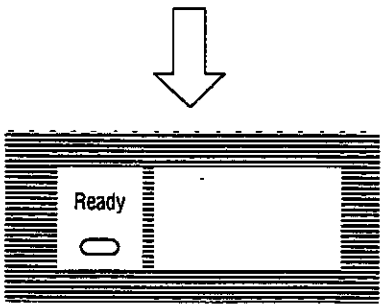
Press MENU 1 / Menu 2 key.



Item	Parity
Contents of Display	Function
NONE	No parity
EVEN	Even parity
ODD	Odd parity

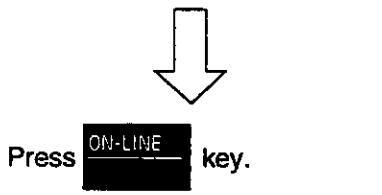
Factory Setting: NONE





Item	Minimum BUSY Time
Contents of Display	Function
200 m SEC	200 ms
1 SEC	1 Sec (1000 ms)

Factory Setting: 200 m SEC



Setting completed.

Appendix B CENTRONICS PARALLEL INTERFACE

1) Connector

- Printer side : 36-pin receptacle
  (single port) Type 57-40360-12-D56 (made by Daiichi Denshi) or equivalent
- Cable side : 36-pin plug
  Type 57-30360 (made by Daiichi Denshi) or equivalent
  Plug-552274-1 (AMP), 552073-1 (AMP) or equivalent

2) Cable

- Cable length : 6 ft (1.8 m) max.

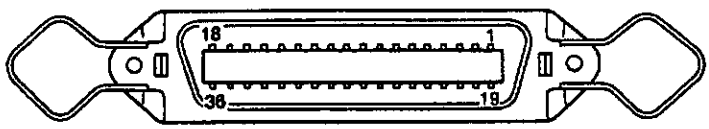
(A Shielded cable composed of twisted pair wires is recommended for noise prevention.)

Note: Cable is not supplied.

3) Table of Parallel I/F Signals

Pin No.	Signal Name	Signal Direction	Functions
1	$\overline{\text{DATA STROBE}}$	→ PR	Parallel data sampling strobe
2	DATA BIT - 1		
3	DATA BIT - 2		
4	DATA BIT - 3		
5	DATA BIT - 4	→ PR	Parallel input data
6	DATA BIT - 5		
7	DATA BIT - 6		
8	DATA BIT - 7		
9	DATA BIT - 8		
10	$\overline{\text{ACKNOWLEDGE}}$	← PR	Completion of data input or end of a function
11	BUSY	← PR	During print processing or during alarm
12	PAPER END	← PR	End of paper
13	SELECT	← PR	Select state (ON-LINE)
14	-		High level (3.3 kΩ)
15	-		(Not used)
16	0V		Signal ground
17	CHASSIS GROUND		Chassis ground
18	+5V	← PR	50 mA max.
19 ⋮ 30	0V		Signal ground
31	$\overline{\text{INPUT PRIME}}$	→ PR	Initializing signal
32	$\overline{\text{FAULT}}$	← PR	End of paper or during alarm
33	0V		Signal ground
34	-		(Not used)
35	-		High level (3.3 kΩ)
36	-		High level (3.3 kΩ)

• Connector pin arrangement

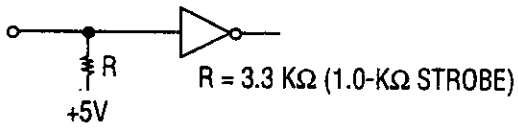


4) Signal Level

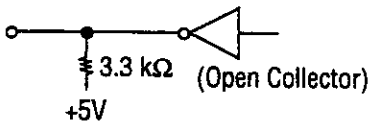
- LOW : 0 V to +0.8 V
- HIGH : +2.4 V to 5.0 V

5) Interface Circuit

a) Receiving Circuit

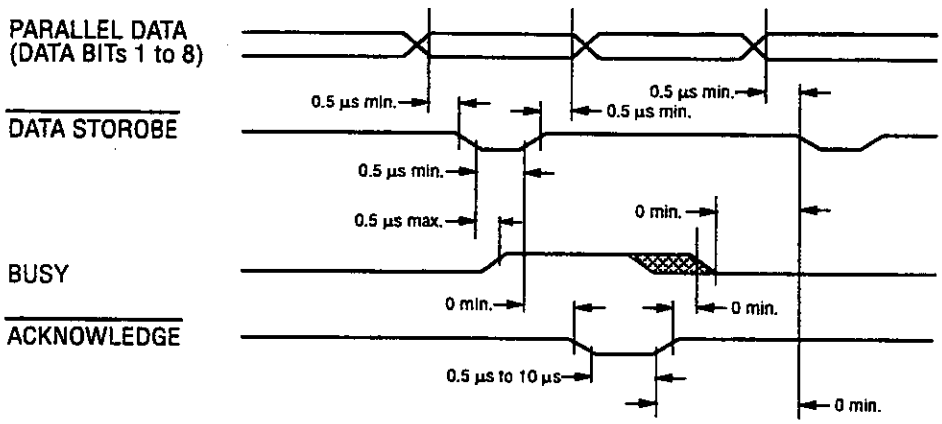


b) Sending Circuit

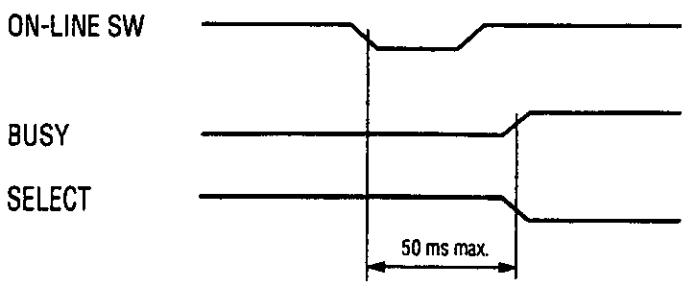


6) Timing Charts

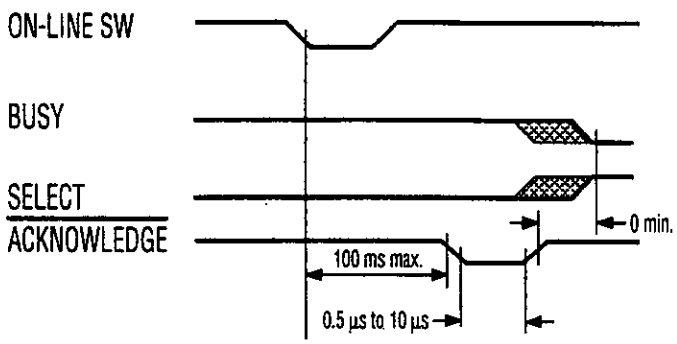
a) Data Receiving Timing



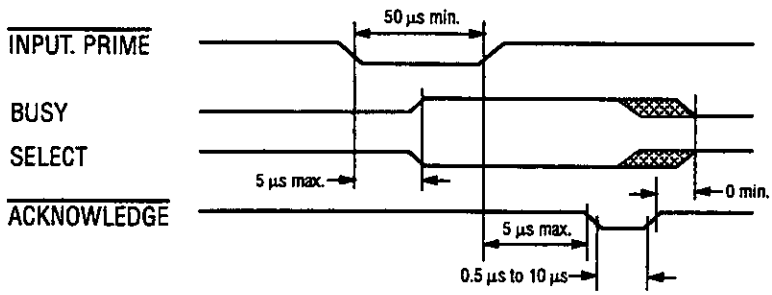
b) On-line → off-line switching timing by ON-LINE SW



c) Off-line → on-line switching timing by ON-LINE SW



d) INPUT PRIME timing (when set to the effective INPUT PRIME signal)

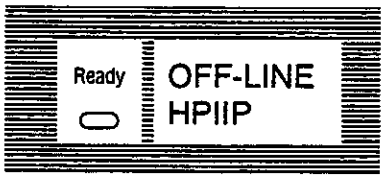


7) Interface Parameter Setting

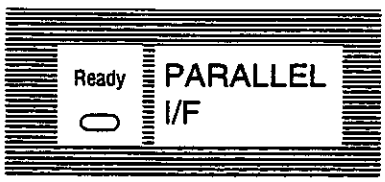
The following settings are possible by pressing ENTER / Copies key after selecting the display contents of the LCD of the operator panel by using NEXT / Demo and LAST / Paper Size keys.

Settings are retained even when the printer power is turned off.

By pressing ON-LINE key, menu setting mode is completed and the printer returns to ON-LINE state.

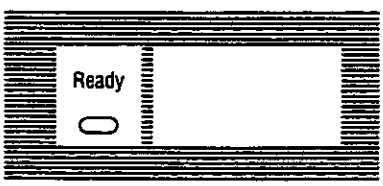


Keep MENU 1 / Menu 2 key down for more than 2 seconds and bring the printer into menu setting mode (level 2). Next, press MENU 1 / Menu 2 key 4 times.



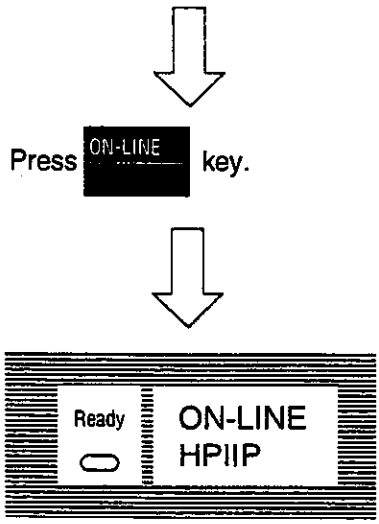
"PARALLEL I/F" is displayed on the LCD.

Press ENTER / Copies key.



Item	I-PRIME
Contents of Display	Function
OFF	I-PRIME signal ignored
ON	I-PRIME signal effective

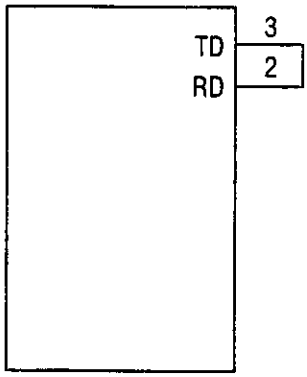
Factory Setting: OFF



Setting completed.

Appendix C LOOP TEST (RS-232C INTERFACE)

1) Connect the test connector



Test Connector Connection Diagram

2) Select "LOOP Test" in the system maintenance mode.
The codes transmitted from the TD signals are comparatively checked with the data received from the RD signals. Error messages, if any, are displayed on the LCD.

Appendix D DIAGNOSTICS TEST

1. Maintenance Modes

- The maintenance modes consist of the user maintenance mode opened to the user, and the system and engine maintenance modes in the serviceman level not disclosed to the user.
- Press the Menu key to update each category. The operation returns to the first category after updating the last category, in a loop.
- Press the Enter key to execute the function being displayed.
- To exit from any of these modes during category display, press the RECOVER or ON-LINE key and the operation mode will start.

1.1 User Maintenance Mode

- To enter the user maintenance mode, turn the power ON while keeping the Menu key pressed down.
- This mode uses the menu for function selection.
- The user maintenance mode provides the following functions:

(1) Hex Dump

- The data received from the upper host is dumped in hexadecimal notation to the printer.
- Printing is activated automatically when the received data exceeds one page. If the received data is less than one page, printing can be activated manually be pressing the Form Feed key after setting the OFF LINE mode by pressing the ON-LINE key (automatic activation of printing even when the received data is less than one page by selecting the Auto Eject function on the menu).
- The only way to exit from this mode is by turning the power OFF.

(2) Menu Reset

- All settings for Menu level-1 are reset to the factory default values.
  The menus for all executable emulations, including options, are reset to the factory default values.
- The operation mode starts automatically upon completion of resetting.

(3) Drum Counter Reset

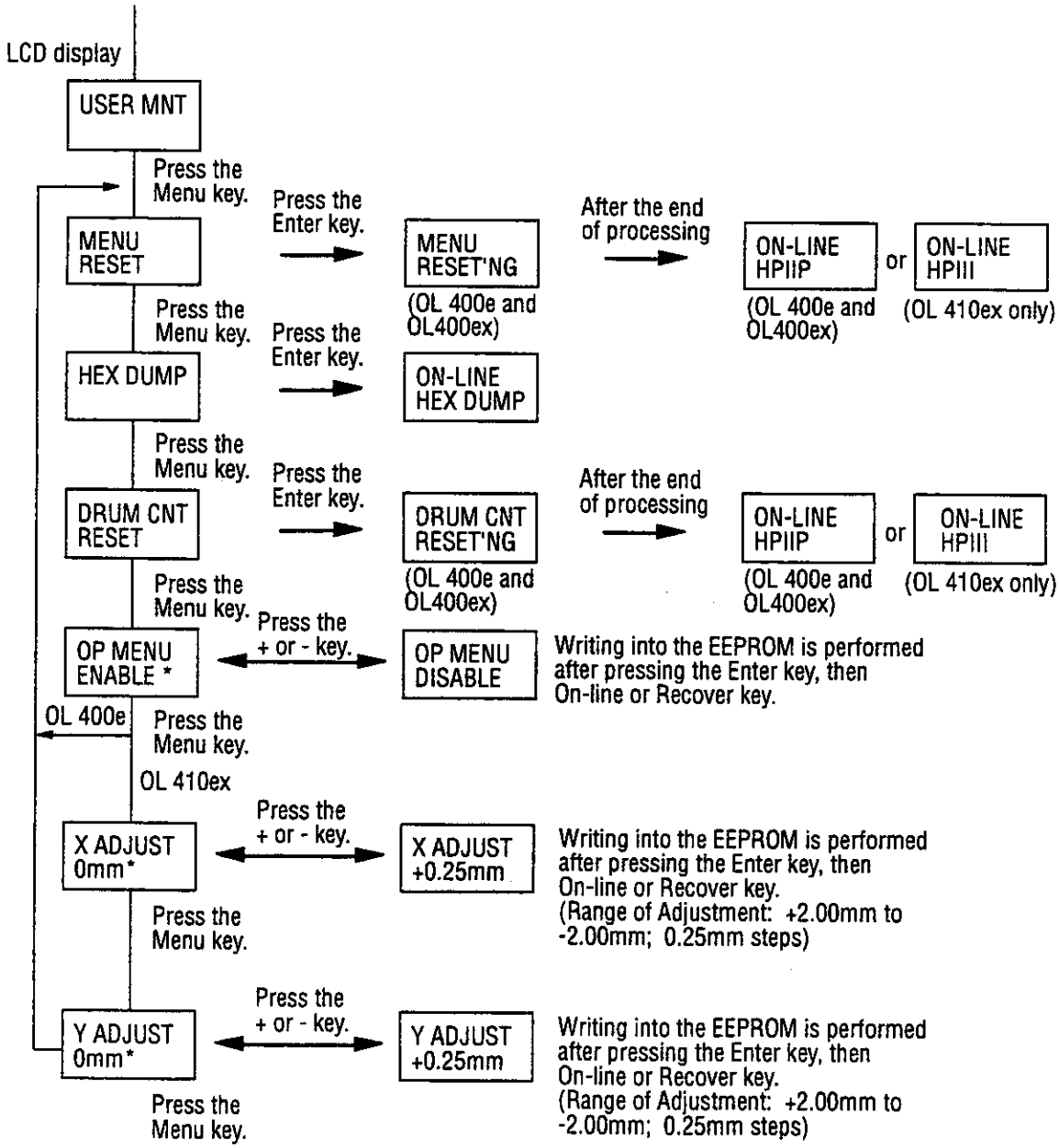
- This function resets the drum life data when the user replaces the image drum unit.
- The operation mode starts automatically upon completion of resetting.

(4) X-Adjust / Y-Adjust (OL410ex only)

- This function sets the first character printing position on the first line.
- The operation mode starts automatically upon completion of resetting.

(5) Operator Panel Menu Disable

- This function is for enabling and disabling of the operation panel menu functions (Menu 1, Menu 2, Tray Select, Copies and Paper Size).


LCD display
USER MNT
Press the Menu key.
MENU RESET
Press the Enter key.
MENU RESET'NG
(OL 400e and OL400ex)
After the end of processing
ON-LINE HPIIP
(OL 400e and OL400ex)
or
ON-LINE HPIII
(OL 410ex only)
Press the Menu key.
HEX DUMP
Press the Enter key.
ON-LINE HEX DUMP
Press the Menu key.
DRUM CNT RESET
Press the Enter key.
DRUM CNT RESET'NG
(OL 400e and OL400ex)
After the end of processing
ON-LINE HPIIP
(OL 400e and OL400ex)
or
ON-LINE HPIII
(OL 410ex only)
Press the Menu key.
OP MENU ENABLE *
Press the + or - key.
OP MENU DISABLE
Writing into the EEPROM is performed after pressing the Enter key, then On-line or Recover key.
OL 400e
Press the Menu key.
OL 410ex
X ADJUST 0mm*
Press the + or - key.
X ADJUST +0.25mm
Writing into the EEPROM is performed after pressing the Enter key, then On-line or Recover key.
(Range of Adjustment: +2.00mm to -2.00mm; 0.25mm steps)
Press the Menu key.
Y ADJUST 0mm*
Press the + or - key.
Y ADJUST +0.25mm
Writing into the EEPROM is performed after pressing the Enter key, then On-line or Recover key.
(Range of Adjustment: +2.00mm to -2.00mm; 0.25mm steps)
Press the Menu key.

1.2 System Maintenance Mode

- The system maintenance mode is set when the power is turned ON while keeping the Recover key pressed down.
- This mode adopts the menu for function selection.
- The system maintenance mode provides the following functions:

(1) Page Count Display

- The total number of pages counted at the engine block is displayed on the LCD.

(2) Page Count Printing Enable/Disable

- This function allows the selection to include (enable) or exclude (disable) the total number of printed pages counted at the engine block at the time of menu printing.

(3) Rolling ASCII Continuous Printing

- The rolling ASCII pattern is printed continuously for various engine tests.
- Press the ON-LINE key to cancel this mode.

(4) Loop Test

- The loop test is for testing the serial I/F functions without connecting the printer to the host.
- The data is sent and received by loop back in the loop test.
- The loop test is performed even when another interface is being selected in Menu level-2.
- Installation of the loop connector is necessary for the loop test.
- The realtime loop count is displayed on the LCD.
- When an error occurs in the course of the test, the corresponding error message is displayed.
- Press the ON-LINE key to cancel this mode.

(5) EEPROM Reset

- All EEPROM areas, including Menu level-2 to the factory default values.

- The following items are excluded:

  Head drive time setting

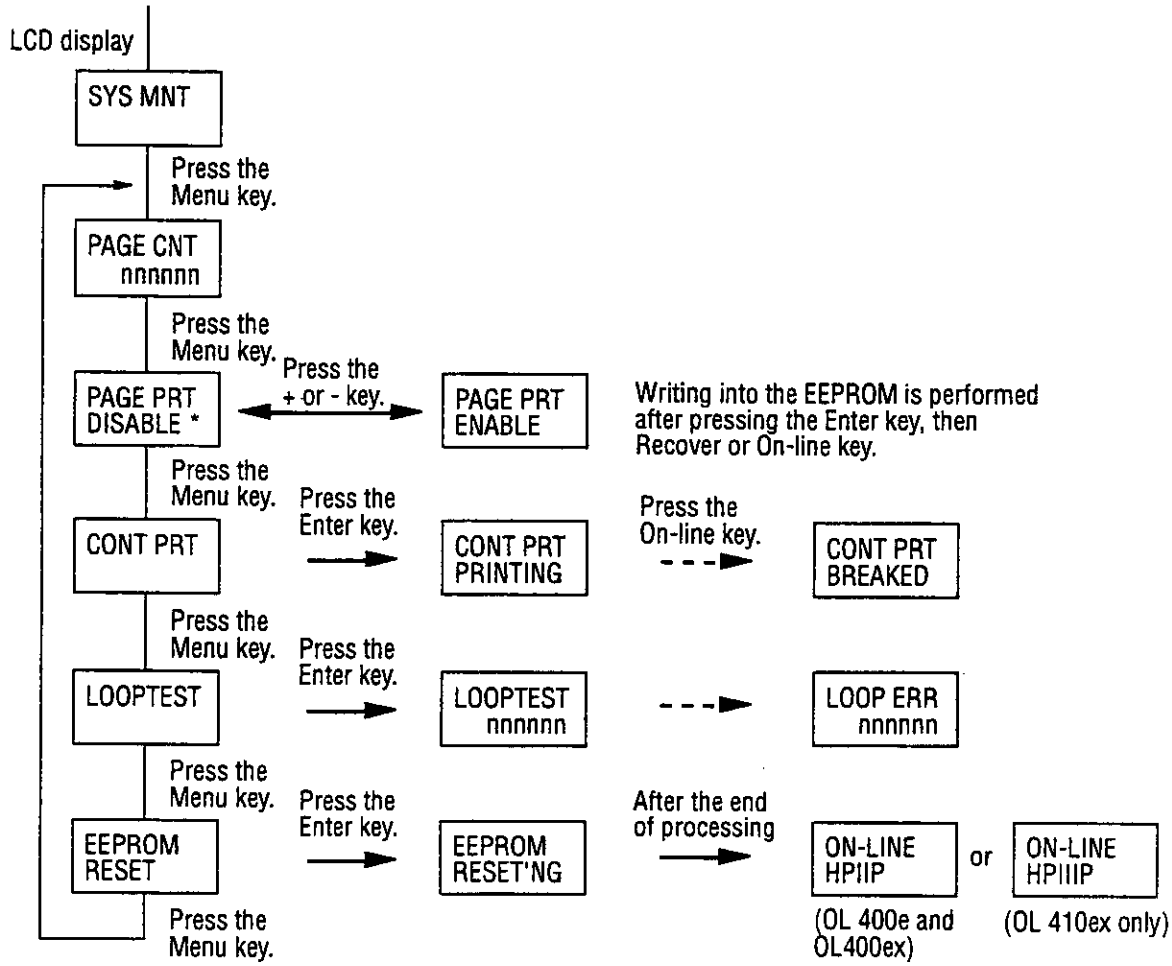
  Fine adjustment of printing start position

  Standard tray paper feed amount setting

- Transition to the operation mode occurs upon completion of resetting.

- Press the Menu key to update each category.
  The operation returns to the first category after updating the last category, in a loop.

(1) System Maintenance Mode Menu System



1.3 Engine Maintenance Mode

- The engine maintenance mode is activated when the power is turned ON while keeping the Form Feed key and Enter key pressed down.
- This mode adopts the menu for function selection.
- The method for exit from this mode depends on the setting.
- The engine maintenance mode provides the following functions:

(1) Head Drive Time Setting

- Sets the drive time of the LED head.

(2) Printing Start Position Setting

- Sets the printing start position.

(3) Drum Count Total Display

- Displays on the LCD the total number of drum revolutions of the unit, counted at the engine block.

(4) Drum Count Display

- Displays on the LCD the total number of EP drum revolutions counted at the engine block.

(5) Factory Adjustment (for Second Tray/Multi-Feeder)

- Do not change the default settings since these are factory settings and were set at the factory.

(6) Engine Reset

- All EEPROM areas used by the engine block are reset to the factory default values.
- The following items are excluded:

  Menu level-1

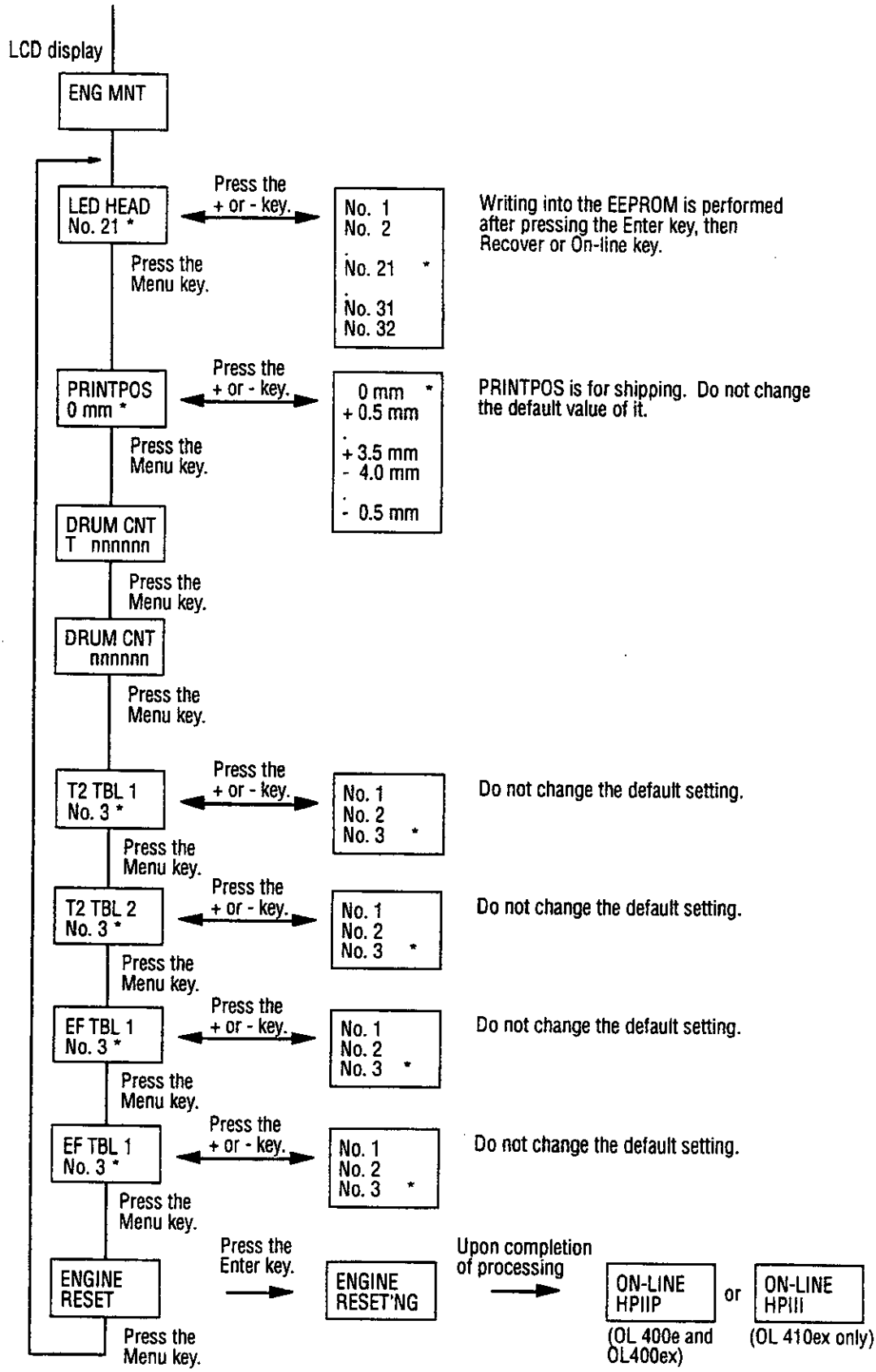
  Menu level-2

  Operator panel menu disable/enable

  Page print disable/enable

- Transition to the operation mode occurs upon completion of resetting.

- Engine maintenance mode menu system



1.4 User Factory Set Operation

- Switching of ODA, OEL, and Non-Europe users settings is possible through the user factory set operation.

- The user factory set operation is performed by turning the power ON while keeping both the Menu key and the NEXT+ or LAST- key pressed down.

(1) ODA Factory Set Operation:

Turn the power ON while keeping the Menu key and NEXT+ key press down.

(2) OEL Factory Set Operation:

Turn the power ON while keeping the Menu key and LAST- key pressed down.

(3) Non-Europe Factory Set Operation

Turn the power ON while keeping the Menu key and FORM FEED key pressed down.

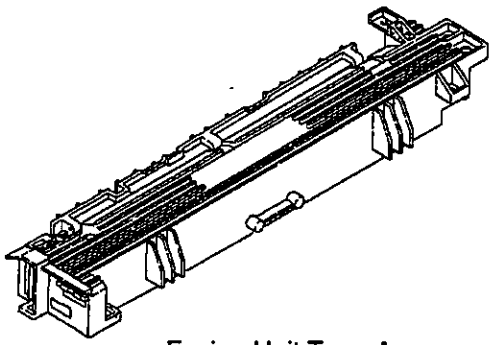
- After executing the user factory set operation, set the EEPROM areas which are for other than the engine block, to the factory default values.

Note: At the time of shipment from the factory, settings corresponding to the destination are mode at the factory.

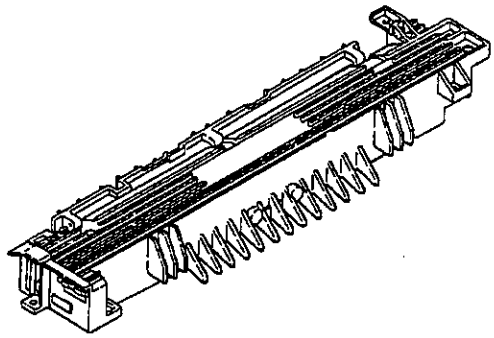
Appendix E FUSING UNIT MAINTENANCE

The fusing unit has two types (types A and B). They are used in the printers with the following serial numbers:

- Fusing Unit Type A .... up to and including S/N 303Axxxxx
- Fusing Unit Type B .... S/N 304Axxxxx onward



Fusing Unit Type A



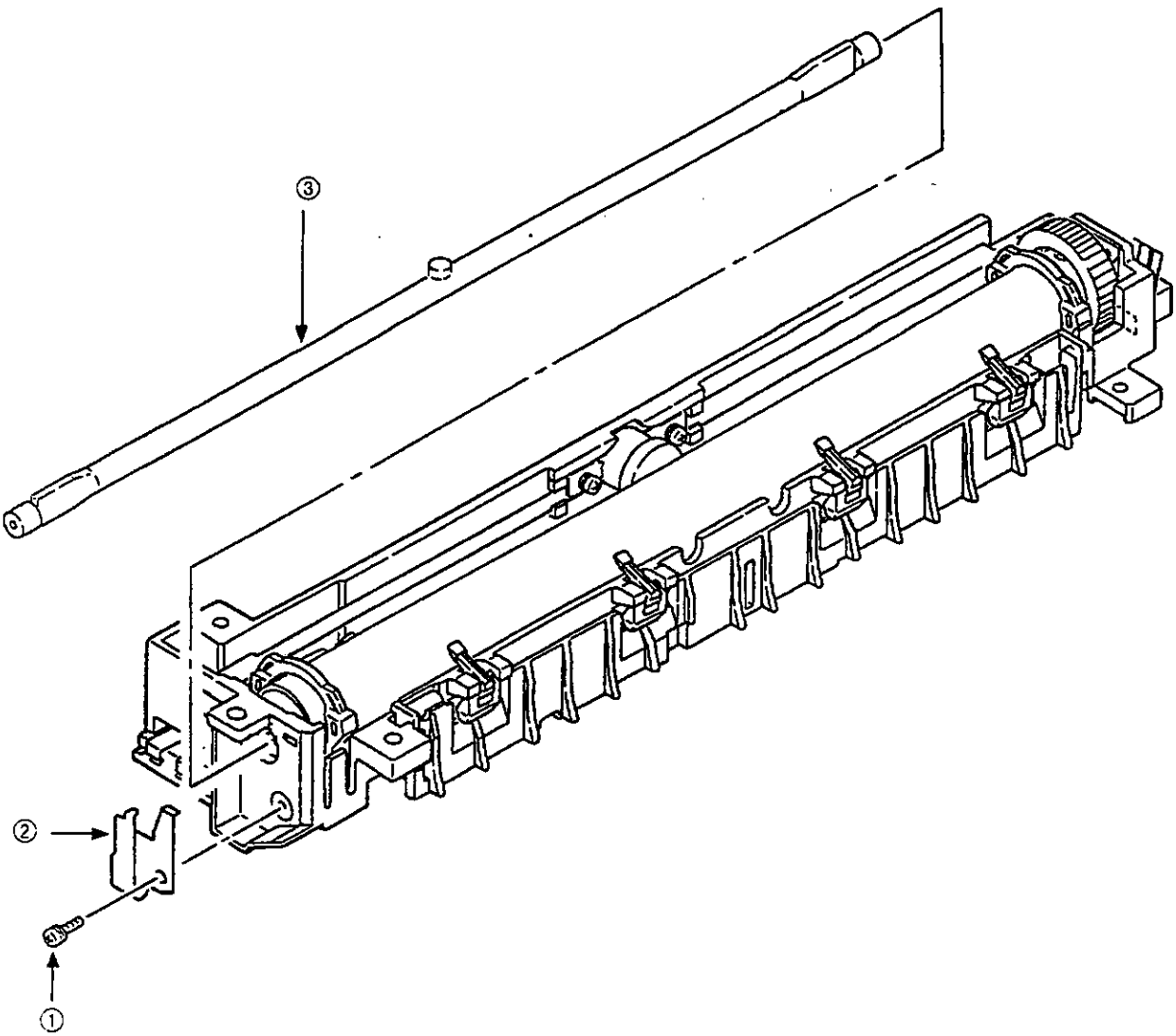
Fusing Unit Type B

The fusing unit for maintenance uses the type B. This cannot be applied to the printers with a serial number up to and including S/N 303Axxxxx. Therefore, if the fusing unit type A breaks down, exchange the following parts to repair it.

Exchanging parts	Parts No.	Remarks
Paper separation claw	4PP4083-6112P1	
Paper separation claw spring	4PP4083-6119P1	
Heater	3PB4083-6103P2	
Thermostat	4PB4083-6104P1	
Gear	4PP4083-6113P1	

1. Heater

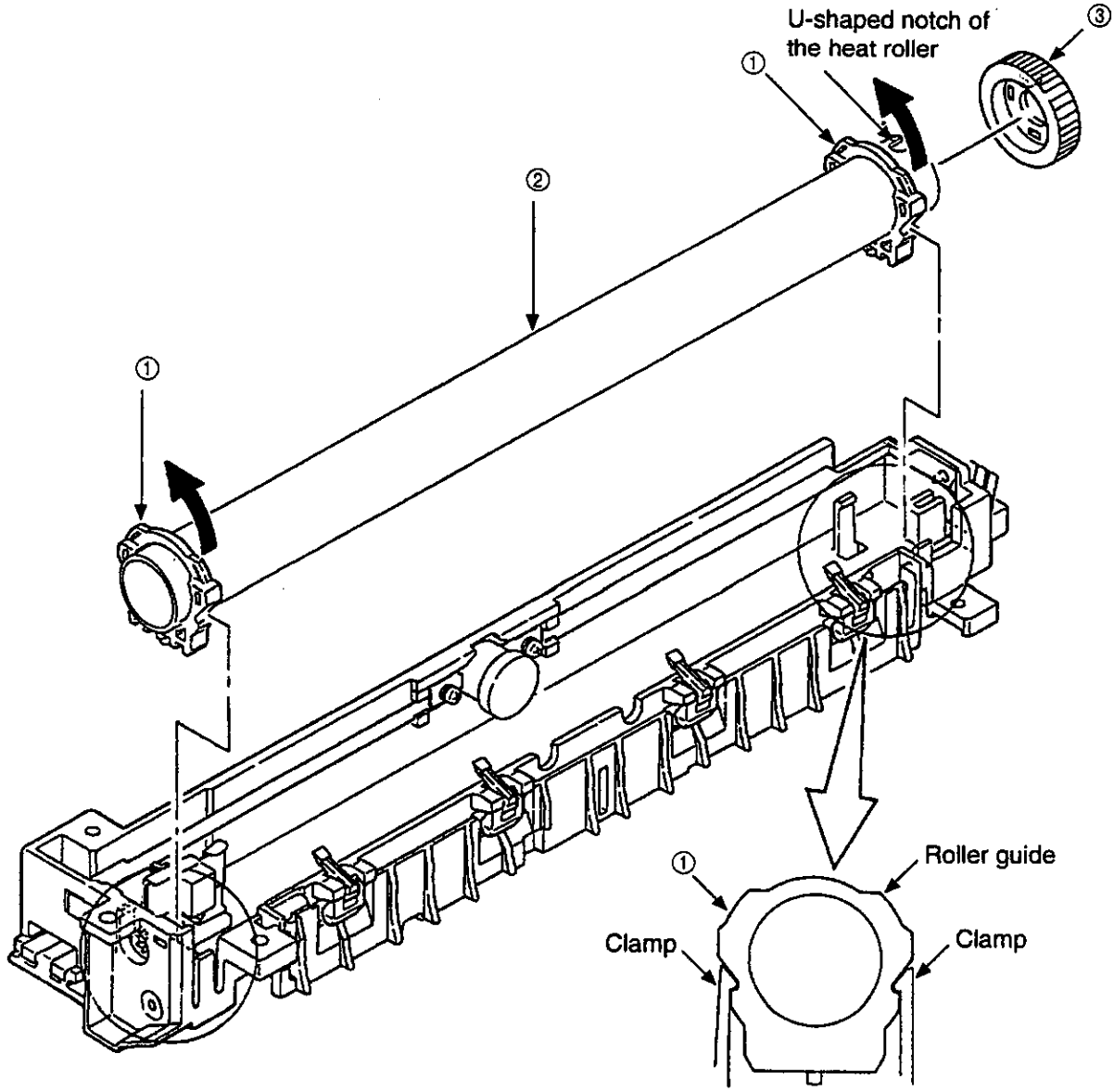
1. Remove the uper cover. (See 3.3.1.)
2. Remove the fusing unit. (See 3.3.14.)
3. Remove the screws ① and then the heater guide ②.
4. Remove the heater ③.



2. Gear

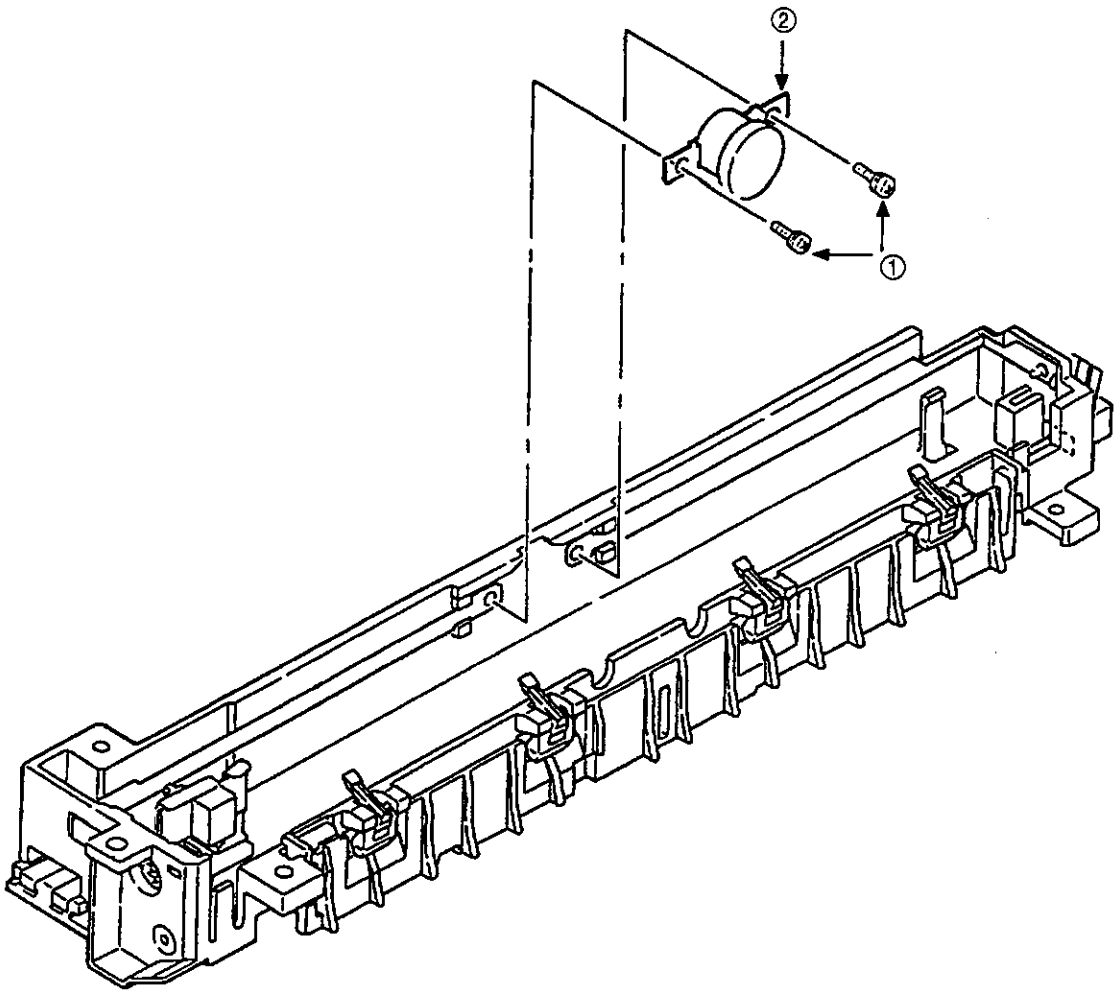
1. Remove the uppwer cover. (See 3.3.1.)
2. Remove the fusing unit. (See 3.3.14.)
3. Remove the heater. (See E-1.)
4. Release the clamps holding the roller guides ① on the right and left sides of the heat roller ② and take out the gear ③ together with the heat roller ②. (Push the roller guides ① on the right and left in the direction of the arrow. Release the clamp on the front side first and then the clamp on the back side.)
5. Remove the gear ③ from the heat roller ②.

Note: When installing the gear, fit the projections of the gear ③ into the U-shaped notch of the heat roller ②.



3. Thermostat

1. Remove the upper cover. (See 3.3.1.)
2. Remove the fusing unit. (See 3.3.14.)
3. Remove the heat roller. (See E-2.)
4. Remove two screws ① and then the thermostat ②.

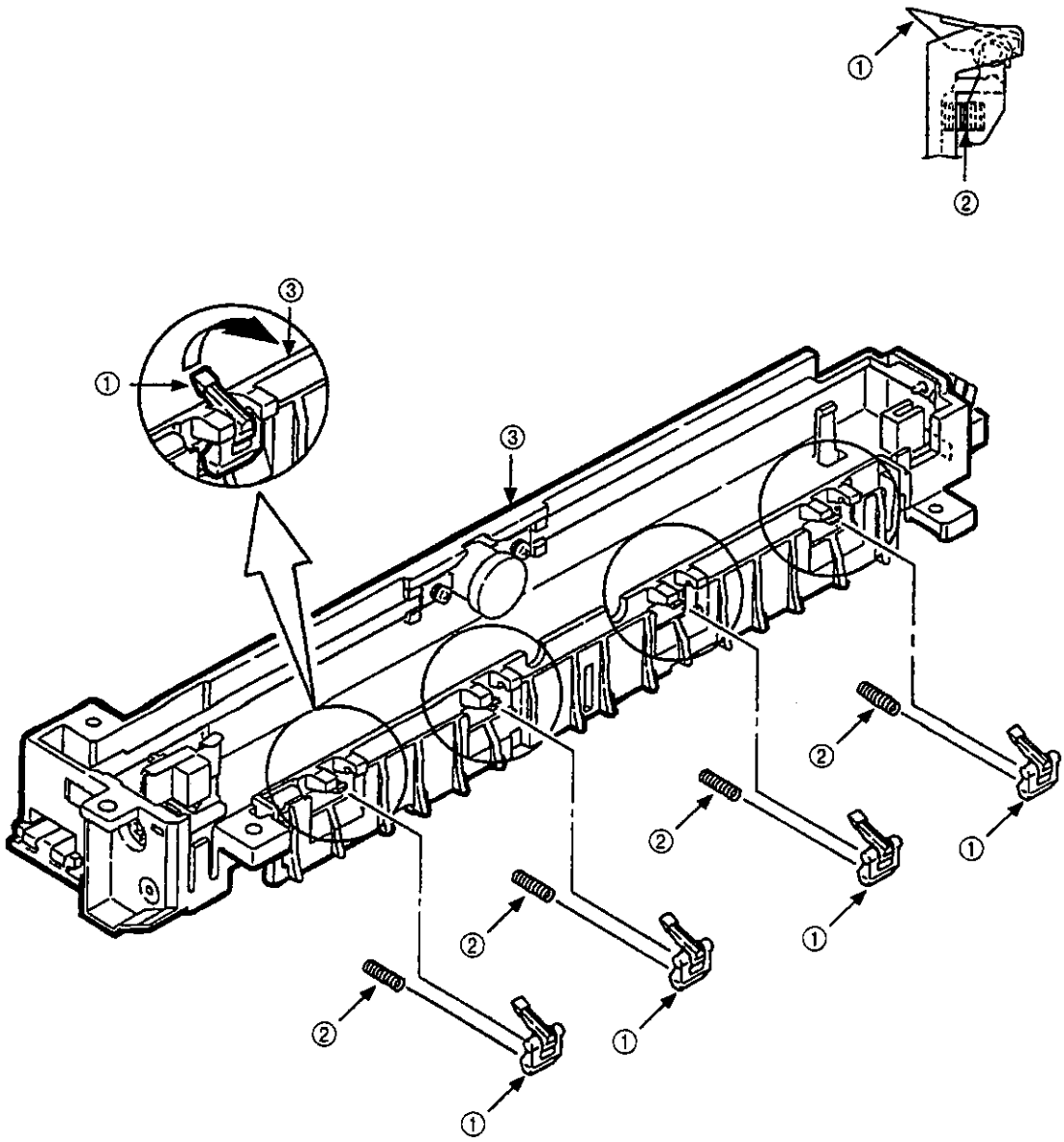


4. Paper Separation Claw, Paper Separation Claw Spring

Four paper separation claws and four paper separation claw springs are used.

1. Remove the upper cover. (See 3.3.1.)
2. Remove the fusing unit. (See 3.3.14.)
3. Remove the heat roller. (See E-2.)
4. Push the paper separation claws ① in the direction of the arrow and remove them. (At this time, the paper separation claw springs also become released. Take care not to lose them.)

Note: Install the paper separation claw springs ② after installing the paper separation claws ① on the fuser cover ③.



Appendix F
Multi-Purpose Feeder Maintenance

PREFACE

This Maintenance Manual is intended for the service personnel and describes the field maintenance methods for Multi-Purpose Feeder option of OL 400e Series LED Page Printer.

Refer to the "Operator Guide" for equipment handling and operation methods.

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1. OUTLINE

1.1 Functions

This Multi-Purpose Feeder is installed on the front section of the printer, and it supplies paper automatically through the operation of stepping motor, which is driven by signals sent from the printer.
The main functions are the followings:

- Paper that can be used:

[Paper Types]

- Standard Paper: Xerox 4200 (20-lb)
- Special Paper: OHP sheets (for PPC), label sheets (PPC sheets)
  * Not guaranteed for OHP sheets with attachments on the edge or reverse side.
- Cut Sheet Size: Letter, Executive, A4, A5, B5, A6
  Special Size: Width 87 to 216mm
  Length 148 to 297mm

[Weight and Thickness]

- 16-lb to 32-lb (60~128 g/m²)
- For Label and OHP Sheets: Label sheets: 0.1 to 0.15mm
  OHP sheets: 0.08 to 0.11mm

*When using sheets which exceed 24-lb, make sure that the paper exits through the face-up route.

1.2 External View and Component Names

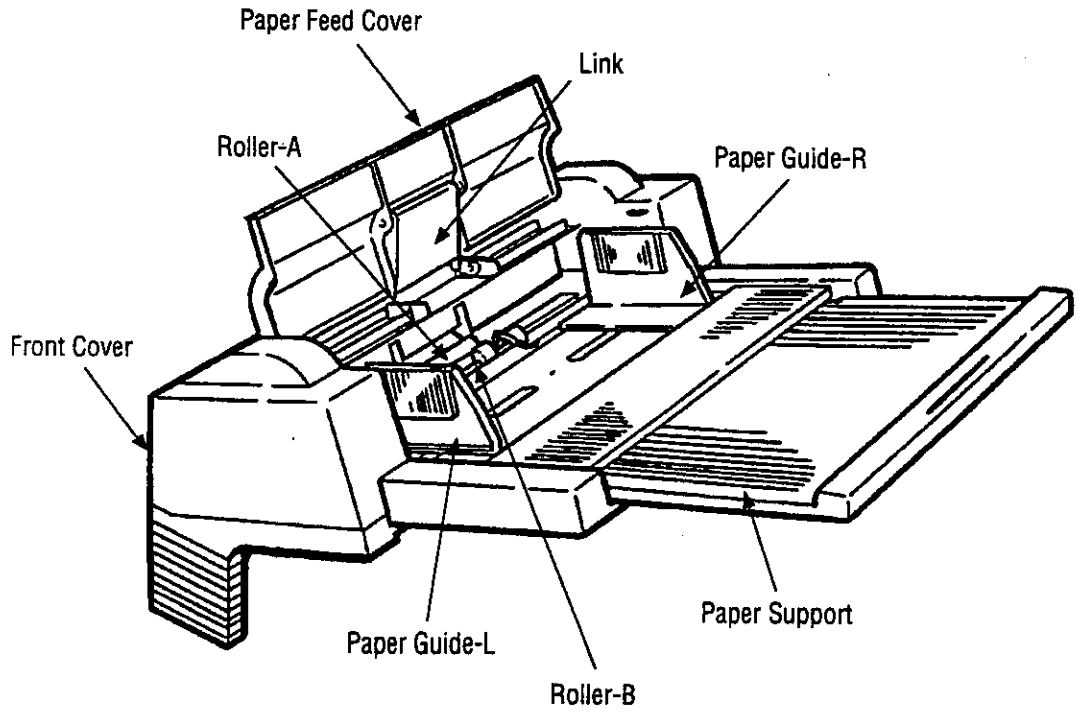


Fig. 1-1

2. MECHANISM DESCRIPTION

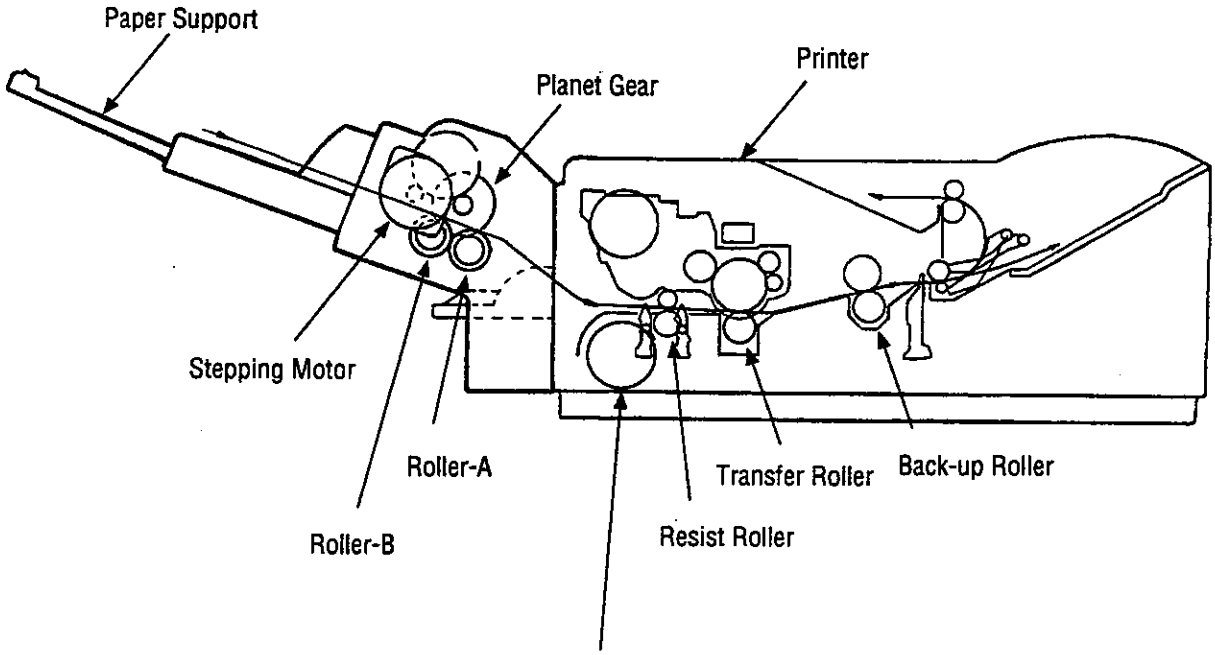
2.1 General Mechanism

The Multi-Purpose Feeder feeds the paper into the printer by receiving the signal from the printer, which drives the stepping motor inside the Multi-Purpose Feeder, and this motion is conveyed to rotate roller-A and B. The paper is delivered from the separator into the printer.

Once delivered into the printer, the paper is then controlled and fed through by stepping motor (Resist) of the printer.

2.2 Hopper Mechanism

The hopper automatically feeds the printer with the paper being set, single sheet at a time. After the paper is set in the Multi-Purpose Feeder, the pulse motor moves the paper and a single paper caught by the separator is fed into the printer.



3. PARTS REPLACEMENT

This section covers the procedures for the assembly, disassembly and installations in the field.
This section describes the disassembly procedures, and for assembly procedures, basically proceed with the disassembly procedures in the reverse order.

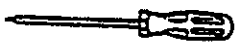
3.1 Precautions Concerning Parts Replacement

(1) Parts replacements must be carried out, by first turning the printer power switch off "O" and removing the Multi-Purpose Feeder from the printer.
(2) Do not disassemble the Multi-Purpose Feeder if it is operating normally.
(3) Establish the extent of disassembly suitable for the purpose of the procedure, and do not disassemble any more than necessary.
(4) Only specified service tools may be used.
(5) Disassembly must be carried out according to the prescribed procedures. Parts may be damaged if such procedures are not followed.
(6) Small parts such as screws and collars can easily be lost, therefore these parts should be temporarily fixed in the original location.
(7) When handling printed circuit boards, do not use any glove which may generate static electricity.
(8) Do not place the printed circuit boards directly on the equipment or floor.

[Service Tools]

Table 3-1 shows the tools required for the replacement of printed circuit boards and units in the field.

Table 3-1 Service Tools

No.	Service Tools		Q' ty	Place of use	Remarks
1		No. 1-100 Philips screwdriver	1	2~2.5 mm screws	
2		No. 2-100 Philips screwdriver	1	3~5 mm screws	
3		No. 3-100 screwdriver	1		
4		No. 5-200 screwdriver	1		
5		Digital multimeter	1		
6		Pliers	1		
7		Handy cleaner	1		

3.2 Parts Layout

This section describes the layout of the main components.

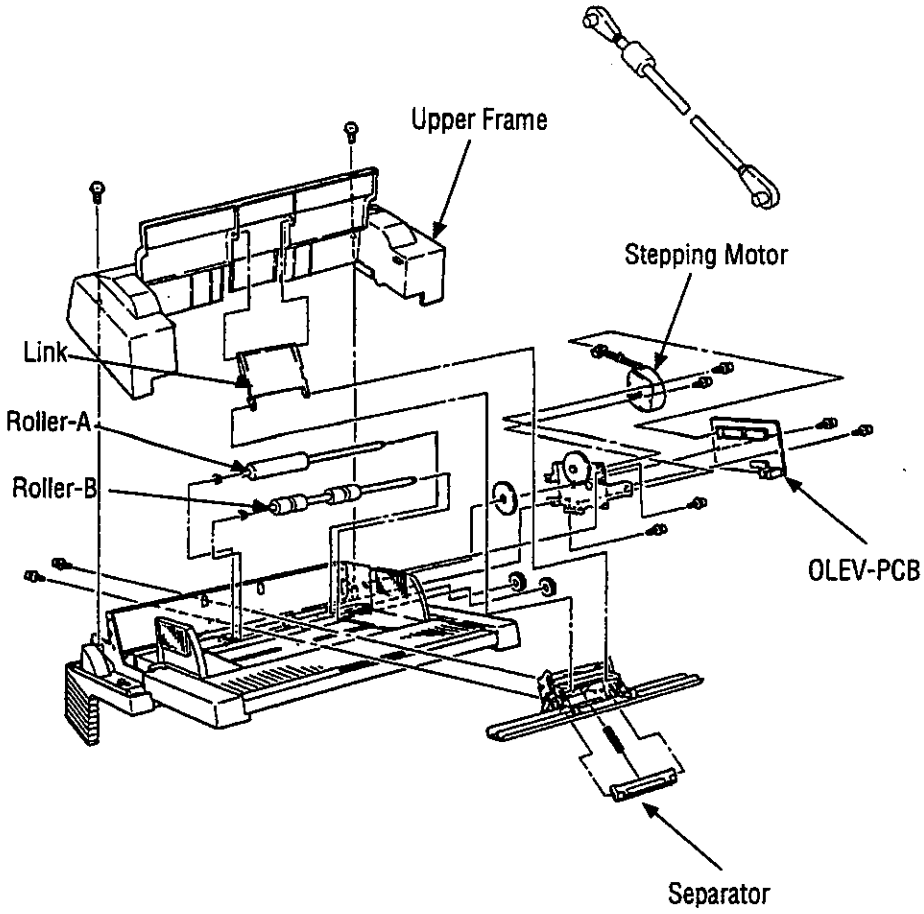
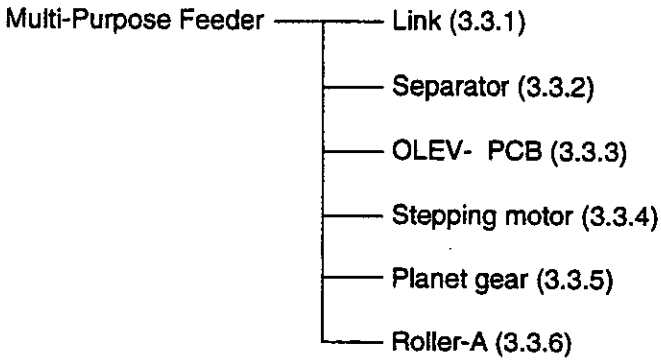


Fig. 3-1

3.3 Parts Replacement Methods

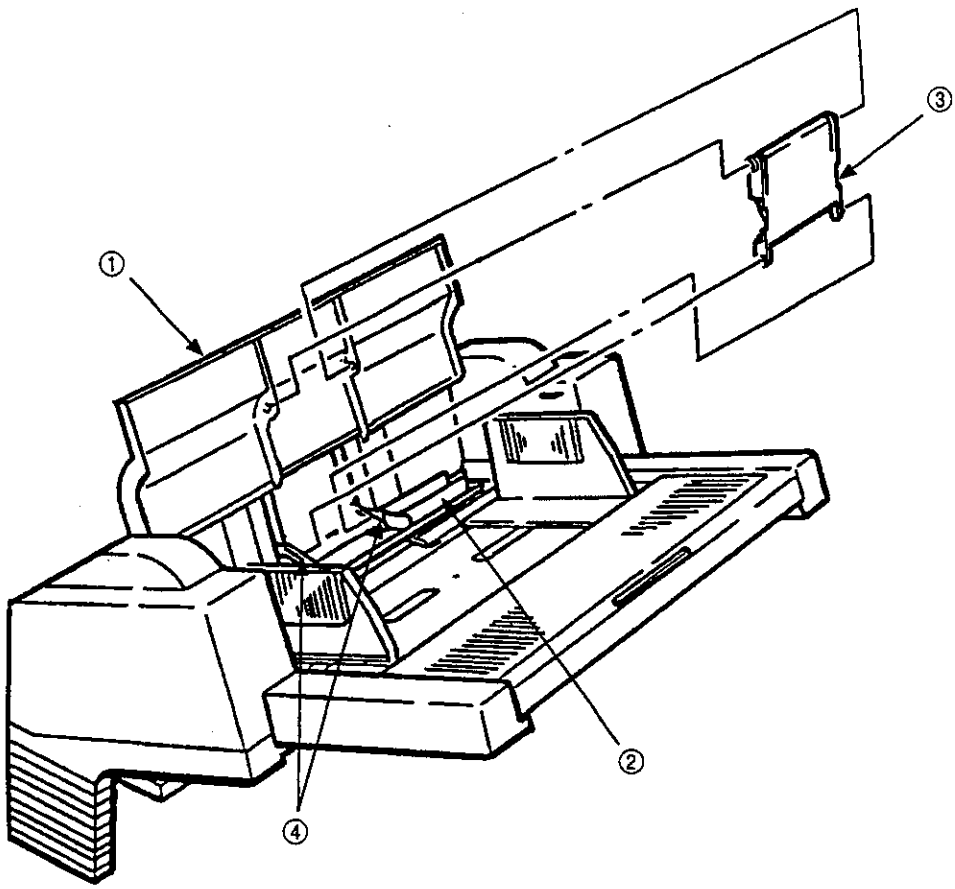
This section describes the parts replacement methods for the components listed in the disassembly order diagram below.



3.3.1 Link

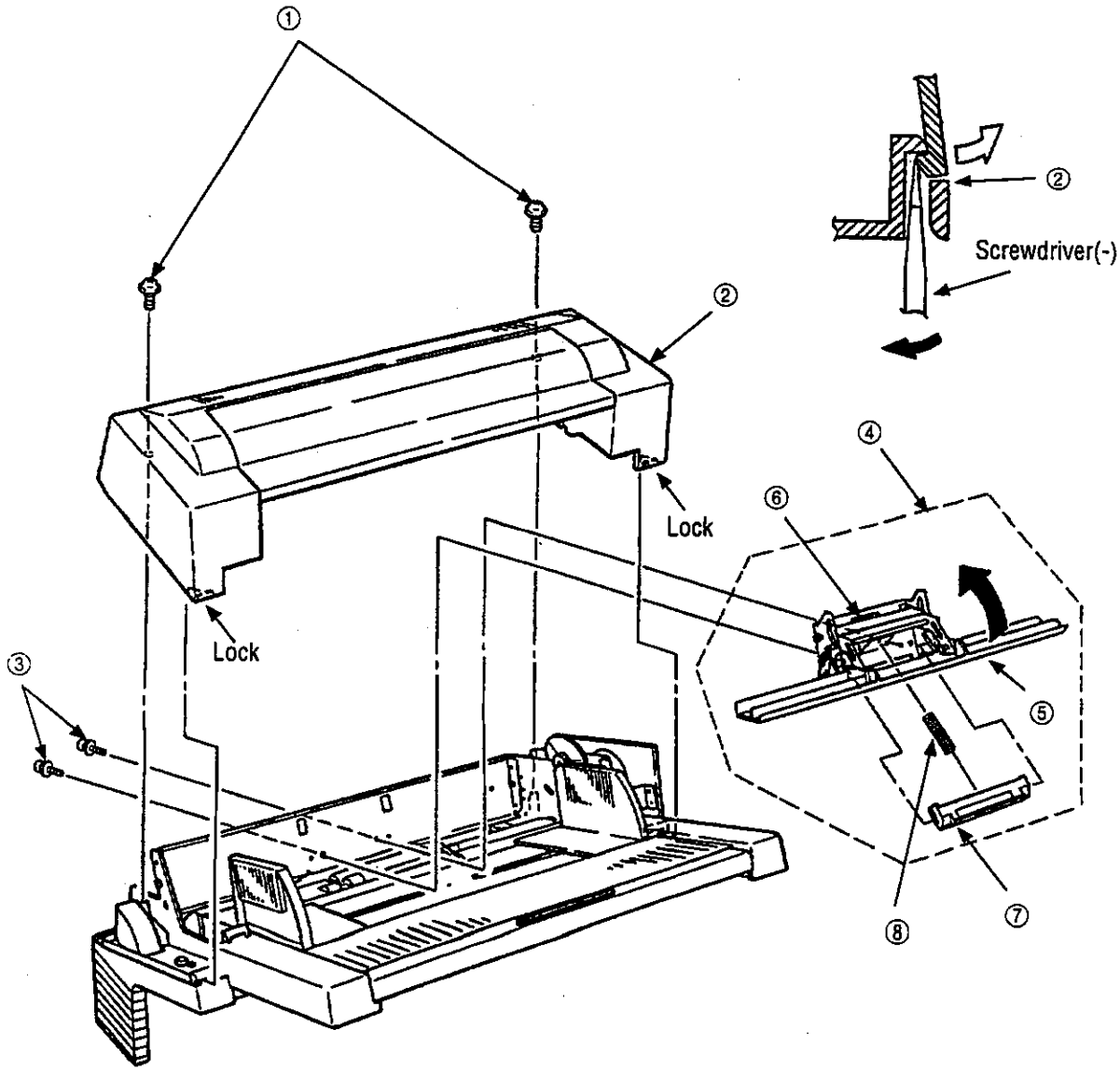
(1) Open paper feed cover ①, and disengage the paper feed cover ① and Link ③, while lifting the paper hold ②.
(2) Remove the paper hold ② off the arm ④.
(3) Disengage the link ③ from the arm ④, and remove it.

* Be careful not to deform the link and arm.



3.3.2 Separator

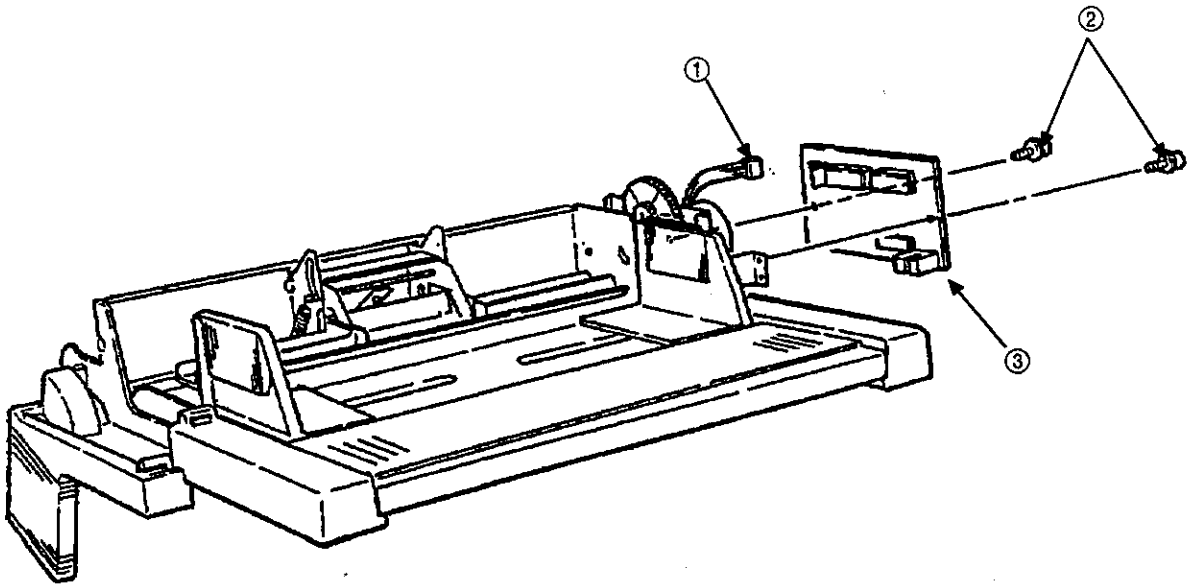
(1) Turn the power switch off "O" and remove the connector cable.
(2) Disengage the link and paper feeder cover (see 3.3.1).
(3) Remove the 2 screws ①, disengage the locks at 2 locations on the upper frame ② with a screwdriver, and remove the upper frame ②.
(4) Remove the 2 screws ③, and take out the separator assembly ④.
(5) Disengage the separator ⑦ from the separator bracket ⑥ while lifting the paper hold ⑤, and take out the separator
(be careful not to lose the spring ⑧ when you are doing this).

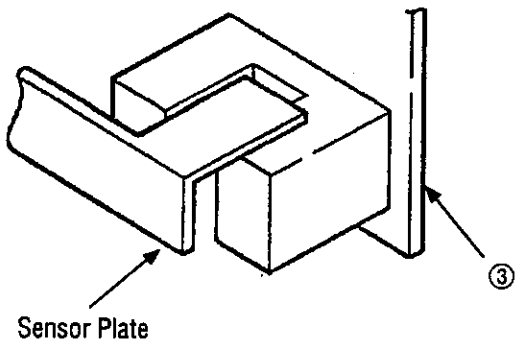


3.3.3 OLEV- PCB

(1) Remove the upper frame (see 3.3.2 steps (1) through (3)).
(2) Remove the connector ①.
(3) Remove the 2 screws ②, and remove the OLEV-11 PCB ③.

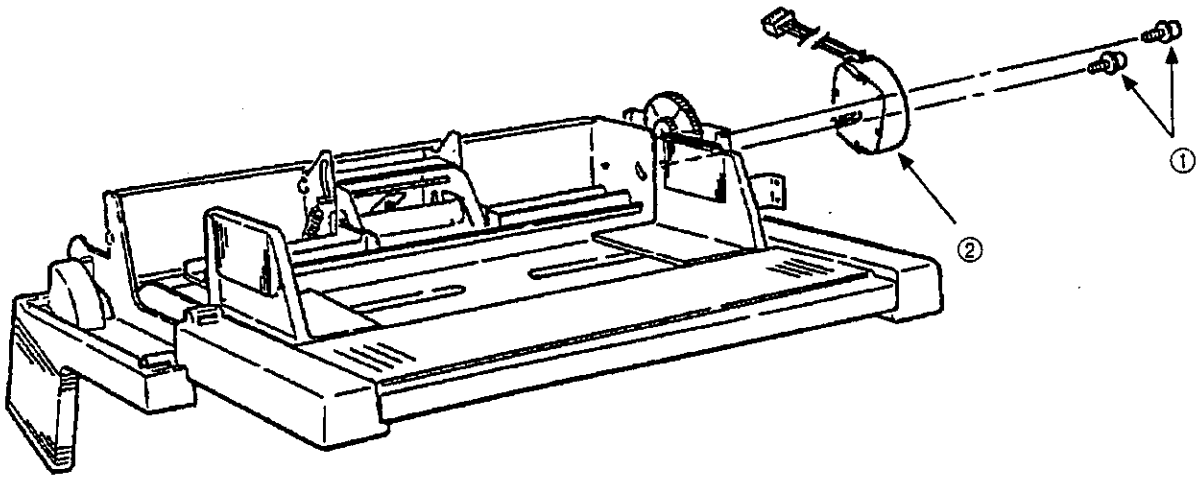
When mounting the printed circuit board, be careful to make sure that the sensor plate is being set correctly.





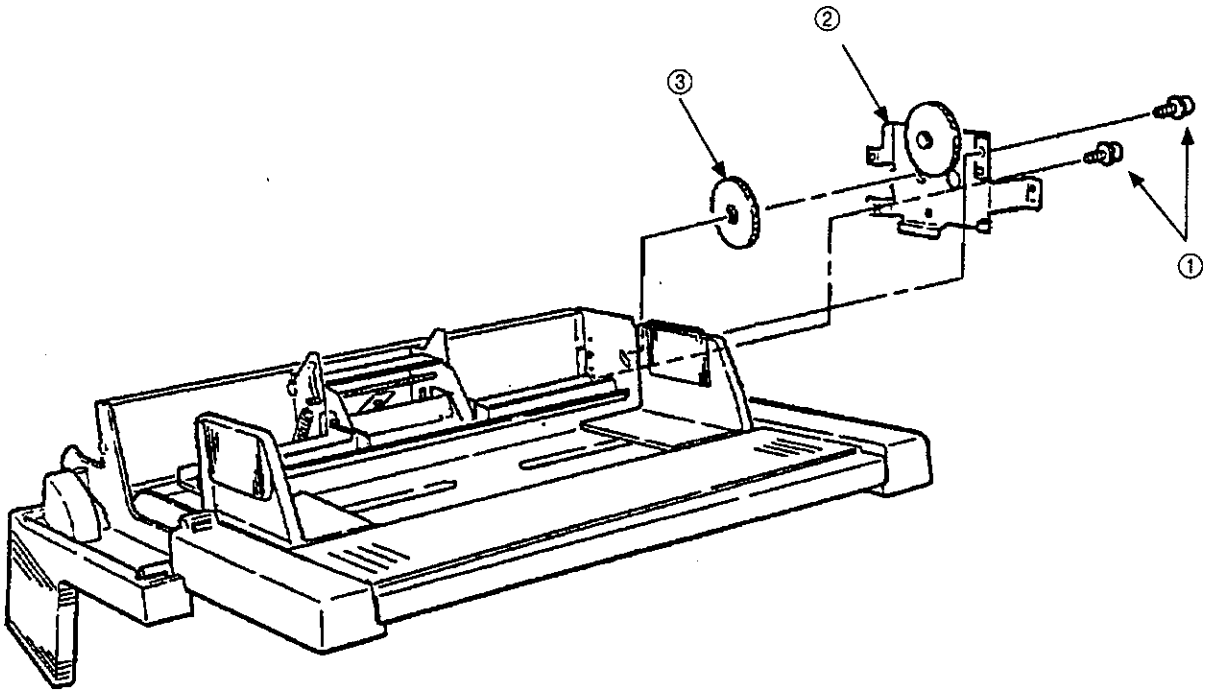
3.3.4 Stepping Motor

(1) Remove the upper frame (see 3.3.2 steps (1) through (3)).
(2) Remove the OLEV- PCB (see 3.3.3).
(3) Remove the 2 screws ①, and remove the stepping motor ②.



3.3.5 Planet Gear

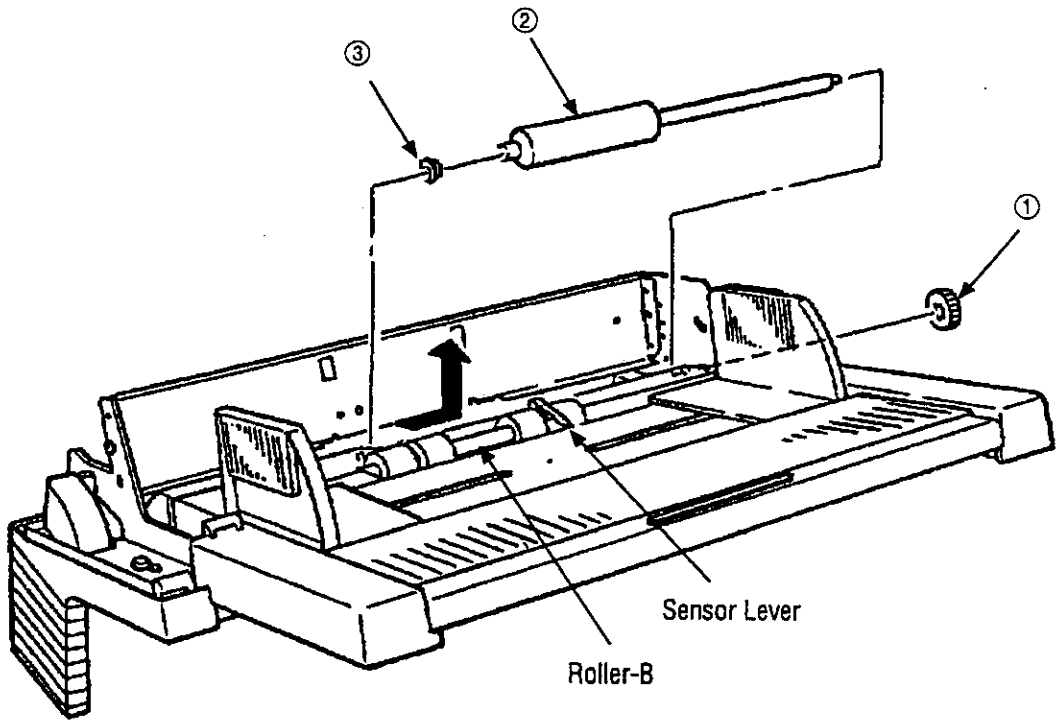
(1) Remove the upper frame (see 3.3.2 steps (1) through (3)).
(2) Remove the OLEV- PCB (see 3.3.3).
(3) Remove the 2 screws ①, and remove the motor bracket assembly ② and planet gear ③.



3.3.6 Roller-A and B

While only the removal procedure for roller-A is described here, the removal procedure for roller-B is basically same. When removing roller-B, however, be careful not to deform the sensor lever.

(1) Remove the upper frame (see 3.3.2 steps (1) through (3)).
(2) Remove the separator assembly (see 3.3.2).
(3) Remove the OLEV- PCB (see 3.3.3).
(4) Remove the motor bracket (see 3.3.5).
(5) Remove the gear ①.
(6) Shift the roller-A ② to the right, lift it on its left side and slide it out (the bearing ③ also comes off while you are doing this, so be careful not to lose it).



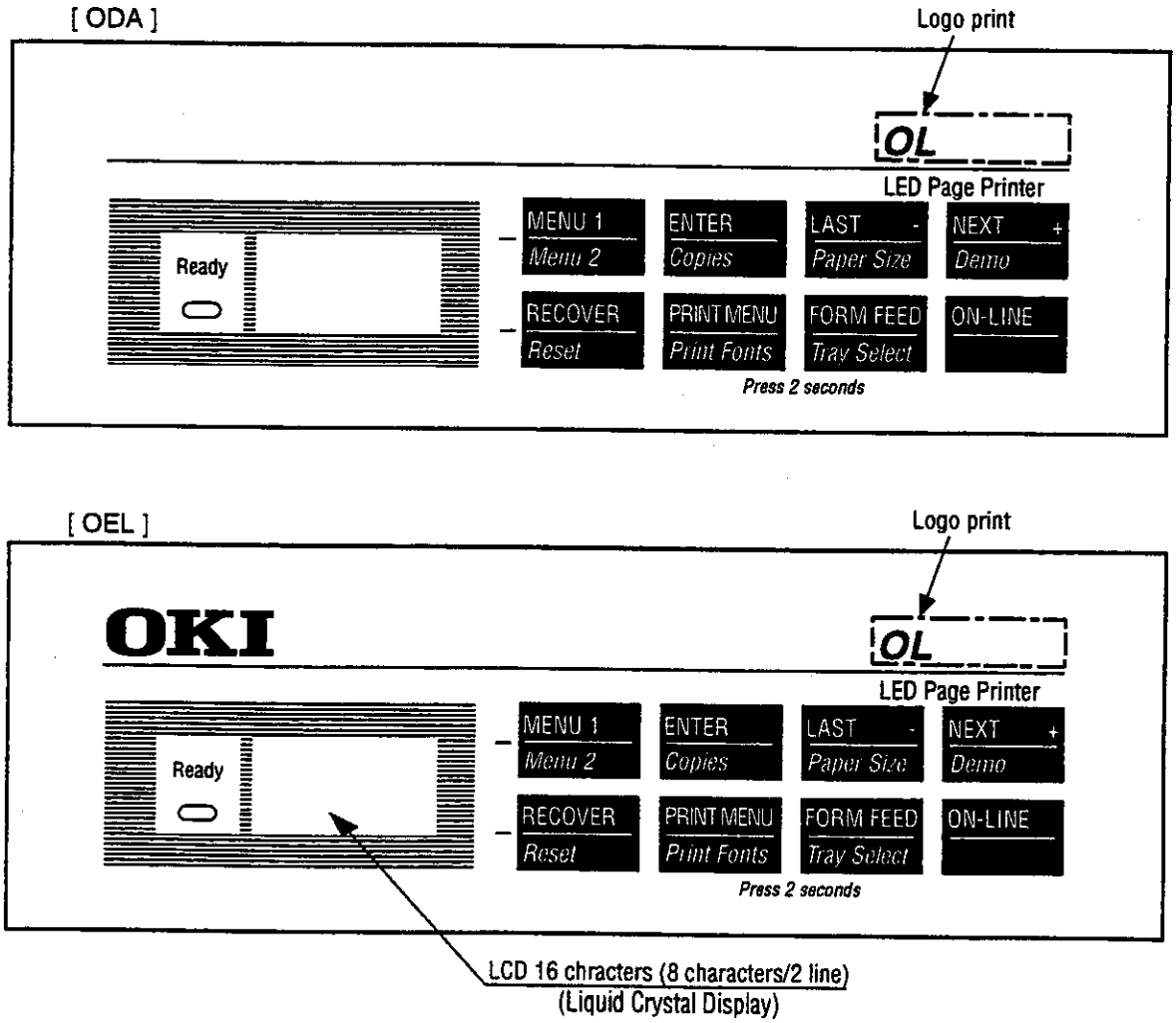
4. TROUBLESHOOTING

4.1 Precautions Prior to the Troubleshooting

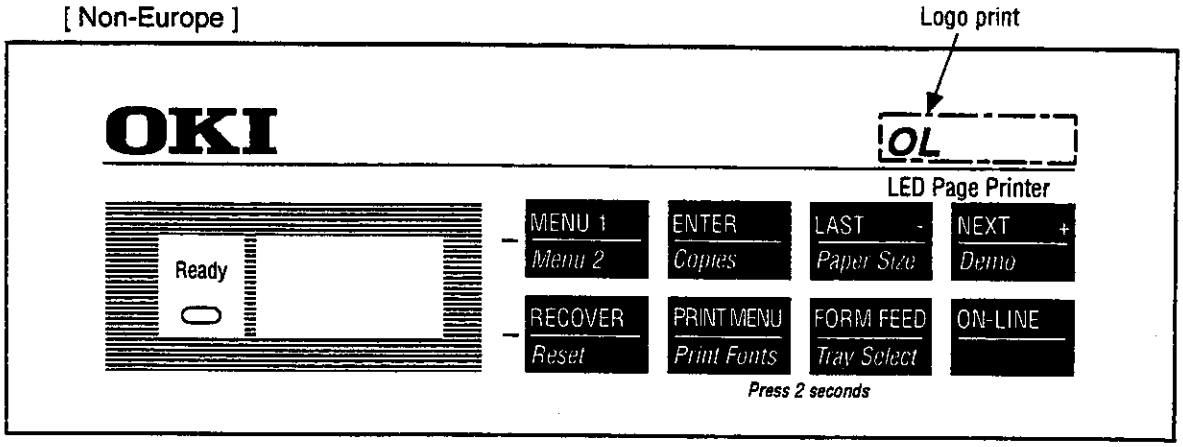
(1) Go through the basic checking items provided in the Operator Guide.
(2) Obtain detailed information concerning the problem from the user.
(3) Go through the checking in the conditions similar to that in which the problem occurred.

4.2 Preparations for the Troubleshooting

(1) Display on the operator panel
The status of the problem is displayed on the LCD (Liquid Crystal Display) on the operator panel. Go through the appropriate troubleshooting procedures according to the messages displayed on the LCD.



[Non-Europe]



Logo print
OL400e
OL400ex
OL410e
OL410ex

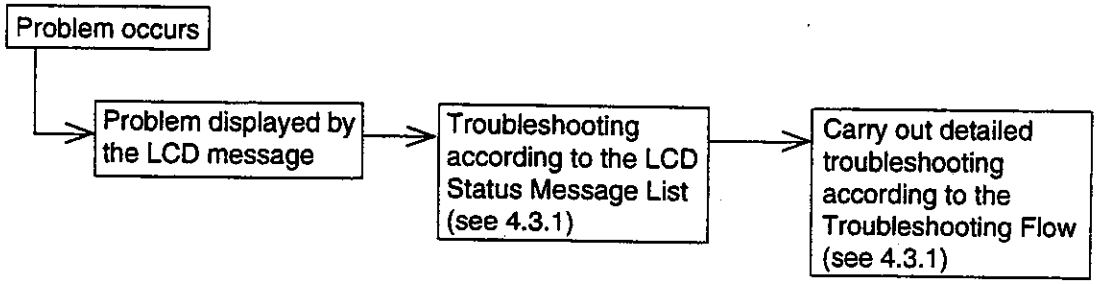
Status message display

Ready LED display

■ : OFF ▨ : BLINKING
▩ : ON ▭ : Undefined

4.3 Troubleshooting Method

When a problem occurs, go through the troubleshooting according to the following procedure.


Problem occurs
Problem displayed by the LCD message
Troubleshooting according to the LCD Status Message List (see 4.3.1)
Carry out detailed troubleshooting according to the Troubleshooting Flow (see 4.3.1)

4.3.1 LCD Status Message List

The listing of the statuses and problems displayed in the form of messages on the LCD is provided in Table 4-1.

Classification	LCD Status Message	Description	Recovery method
Jam error	■ □	Notifies of occurrence of jam while the paper is being fed from Multi-Purpose Feeder	• Check the paper in the Multi-Purpose Feeder. Carry out the recovery printing by opening and closing the cover, and turn the error display off. • When the problem occurs frequently, to through the Troubleshooting.
Paper size error	■ □	Notifies of incorrect size paper feeding from Multi-Purpose Feeder.	• Check the paper in the Multi-purpose Feeder. Also check to see there was a feeding of multiple sheets. Carry out the recovery printing by opening and closing the cover, and turn the error display off.
Tray paper out	■ □	Notifies of no paper state of the Multi-Purpose Feeder.	• Load the paper in Multi-Purpose Feeder.

• (JAM error)

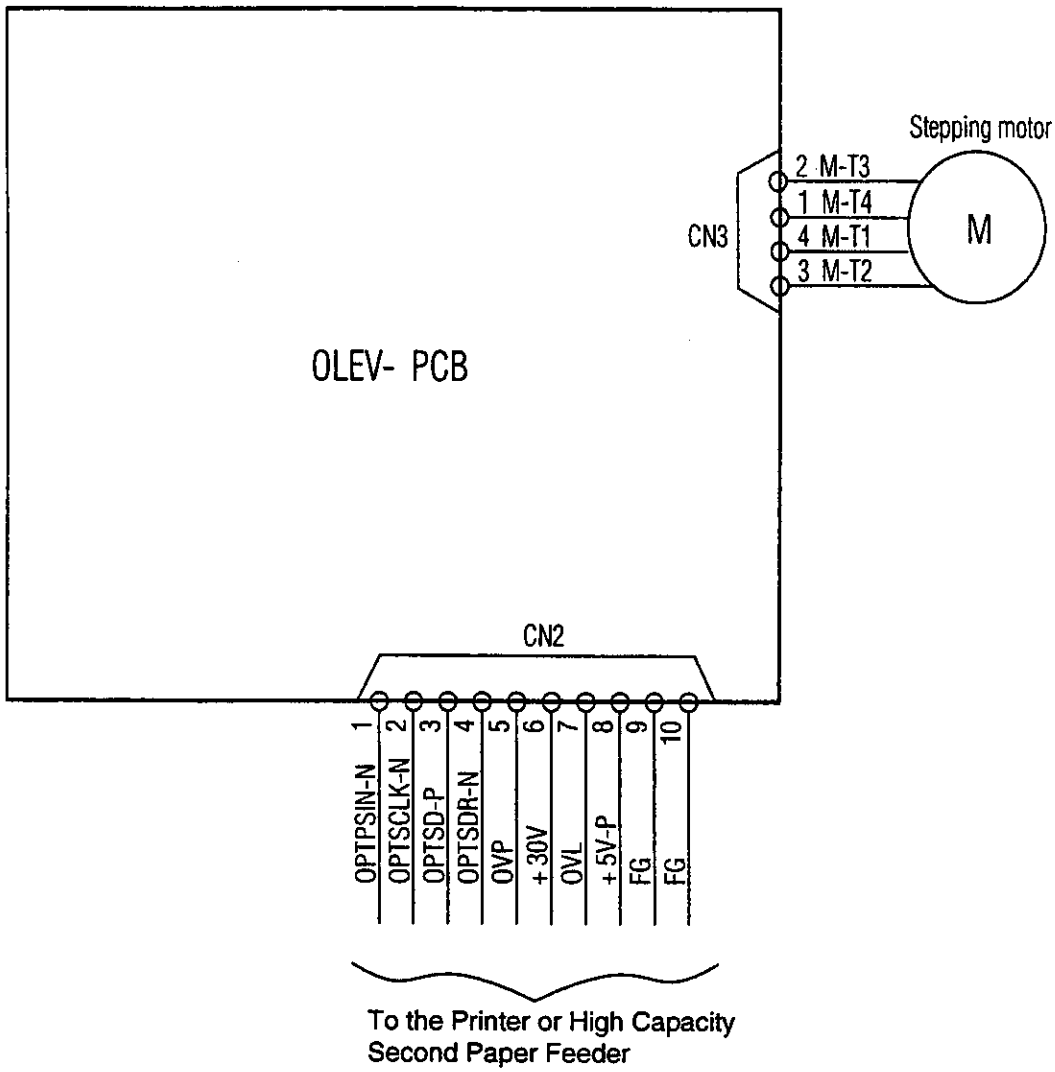
Paper Inlet Jam

• Does paper jam at the inlet when the power is turned on?

- • YES Is the paper located above the sensor plate (Inlet)?
  - • YES Remove the paper.
  - • NO Is the sensor plate (Inlet) operating normally?
    - • NO Replace the sensor plate (Inlet).
    - • YES Replace the power supply board or inlet sensor.
- • NO When the paper is fed in, does the paper inlet jam occur?
  - • YES Is the paper being fed to above sensor plate (Inlet)?
    - • YES Is the sensor plate (Inlet) operating normally?
      - • NO Replace the sensor plate (Inlet).
      - • YES Clean the Inlet sensor on the power supply board or replace the power supply board or Inlet sensor.
    - • NO Replace the roller-A or roller-B.
  - • NO Are the roller-A and roller-B rotating?
    - • YES Set the paper properly.
  - • NO Is the stepping motor turning?
    - • YES Replace planet gear.
  - • NO Is the connector cable being connected properly?
    - • NO Connect the connector cable properly.
  - • YES Check the coil resistance (approx. 32Ω) of the stepping motor. Is is normal?
    - • NO Replace the stepping motor.
  - • YES Replace the OLEV- PCB.

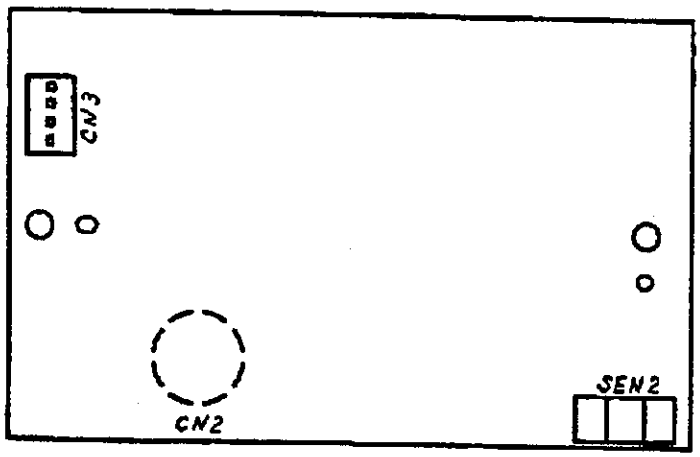
5. CONNECTION DIAGRAM

5.1 Interconnection Diagram



5.2 PCB Layout

OLEV- PCB



6. PARTS LIST

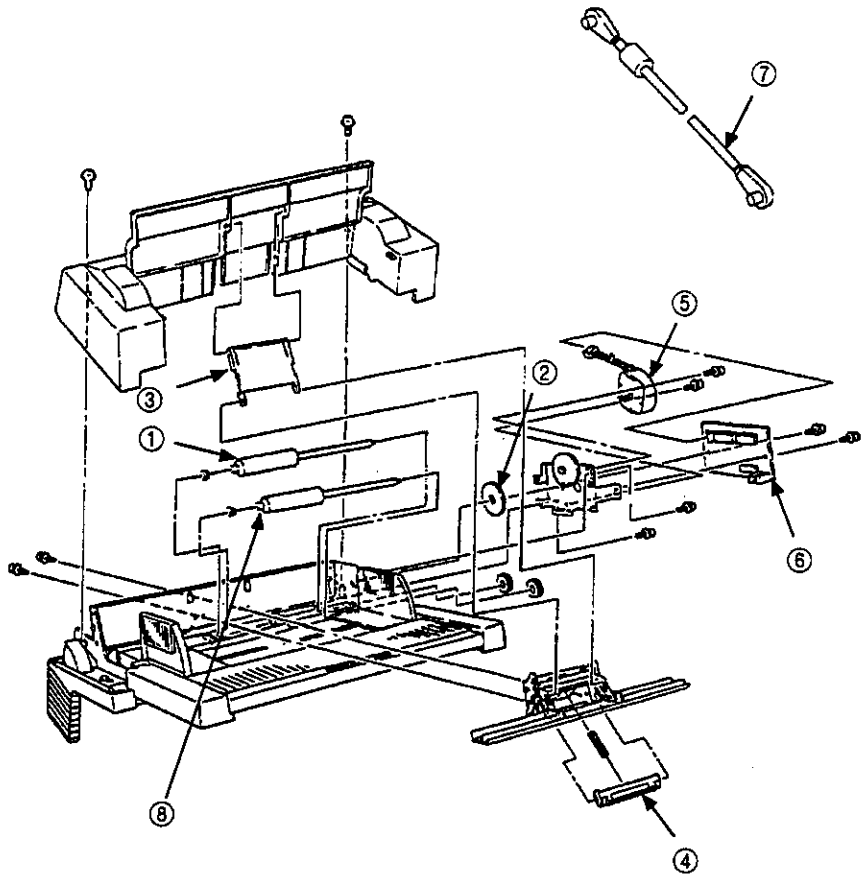


Figure 6-1 Multi-Purpose Feeder

Table 6-1 Multi-Purpose Feeder

No.	Description	Part No.	Q'ty	Remark
1	Roller-A	3PB4083-5514P1	1	
2	Planet gear	4PP4083-5520P1	1	
3	Link	3PP4083-5540P1	1	
4	Separator	4PP4083-5544G1	1	
5	Stepping motor	4PB4083-6075P1	1	Same as printer unit.
6	OLEV-PCB	4YA4121-1014G11	1	
7	Connector cable	3YS4011-3141P1	1	
8	Roller-B	3PB4083-5524P1	1	

Appendix G
High Capacity Second Paper Feeder Maintenance

PREFACE

This Maintenance Manual is intended for the service personnel and describes the field maintenance methods for High Capacity Second Paper Feeder option of OL 400e Series LED Page Printer.

Refer to the "Operator Guide" for the equipment handling and operation methods.

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   - 1.2 External View and Component Names ..... G - 4

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   - 2.2 Hopper Mechanism ..... G - 5

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   - 3.2 Parts Layout ..... G - 8
   - 3.3 Parts Replacement Methods ..... G - 9
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     - 3.3.2 OLEV-2 PCB ..... G - 11
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4. **TROUBLESHOOTING PROCEDURES** ..... **G - 13**
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   - 4.3 Troubleshooting Method ..... G - 15
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   - 5.2 PCB Layout ..... G - 18

6. **PARTS LIST** ..... **G - 19**

1. OUTLINE

1.1 Functions

The printer is mounted on top of this High Capacity Paper Feeder, and it supplies paper automatically through the operation of stepping motor (Hopping), which is driven by signals sent from the printer.
The main functions are the followings:

- Paper that can be used:

[Paper Type]
- Standard Paper: Xerox 4200 (20-lb)
- Special Paper: OHP sheets (for PPC), Label sheets (PPC sheets); use of envelopes or thick paper is not possible.
- Cut Sheet Size: A4, A5, B5, Letter, Executive, Legal13, Legal14
- Special Size: Paper Width: 87 to 216mm
  Paper length: 190 to 355.6mm

[Weight]
- 16-lb to 24-lb (60 to 90 g/m²)

- Paper setting quantity: 250 sheets of paper weighing 64 g/m²

1.2 External View and Component Names

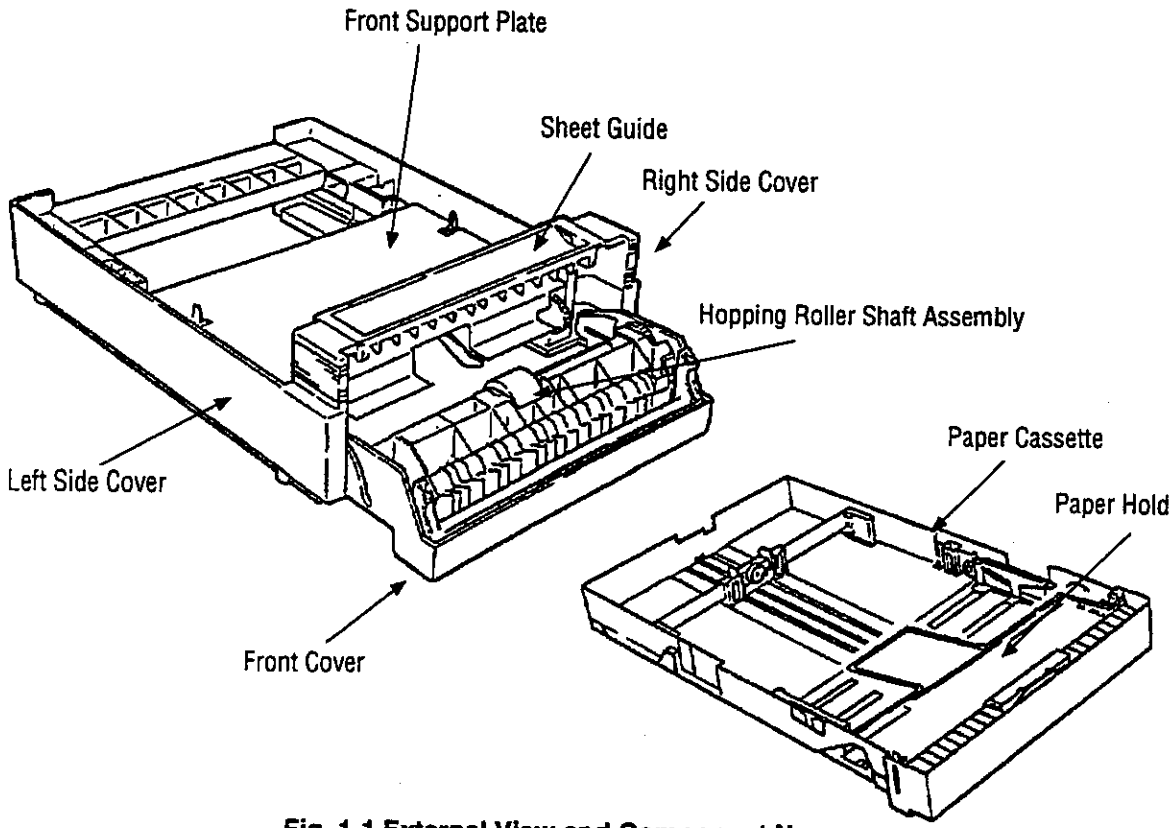


Fig. 1-1 External View and Component Names

2. MECHANISM DESCRIPTION

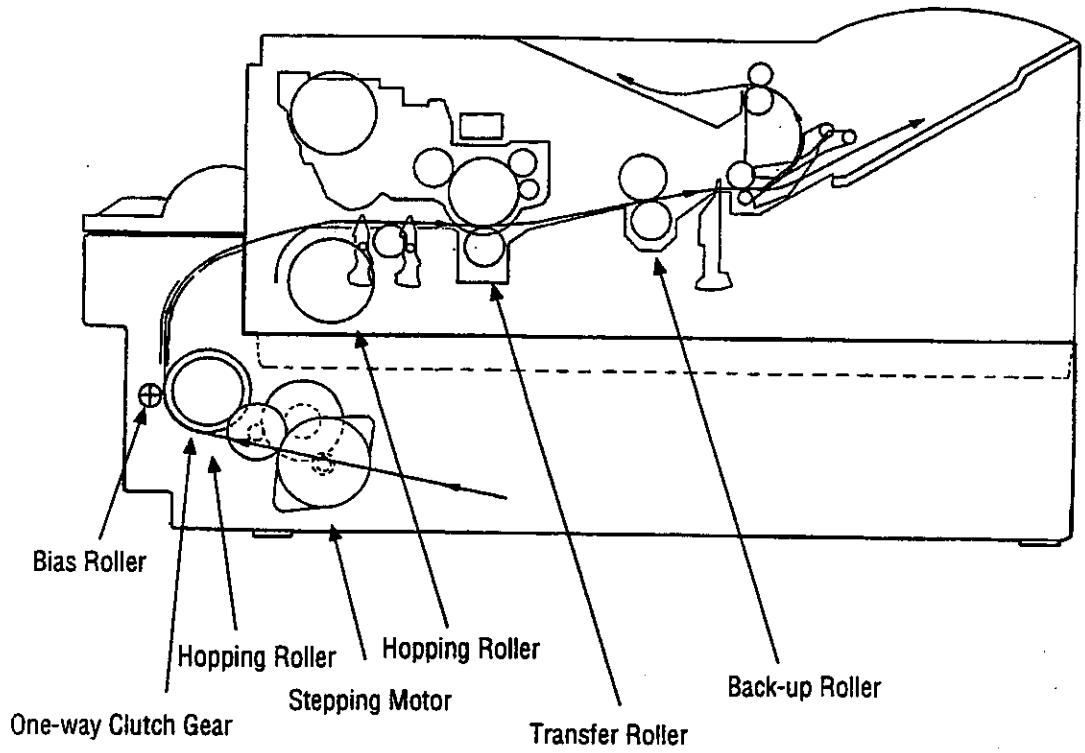
2.1 General Mechanicsm

The High Capacity Feeder feeds the paper into the printer by receiving the signal from the printer, which drives the stepping motor inside the High Capacity Paper Feeder, and this motion this converyed to rotate the One-way clutch of the hopping shaft assembly. The paper is delivered from the hopper into the printer through the turning of the hopping shaft assembly.

Once delivered into the printer, the paper is then controlled and fed through by stepping motor (Resist) of the printer.

2.2 Hopper Mechanism

The hopper automatically feeds the printer with the paper being set, single sheet at a time. When the paper is loaded in the paper cassette, it is then transported by the stepping motor, carrying forwartd only a single sheet caught by the brake shoe at a time.



3. PARTS REPLACEMENT

This section covers the procedures for the assembly, disassembly and installations in the field.
This section describes the disassembly procedures, and for assembly procedures, basically proceed with the disassembly procedures in the reverse order.

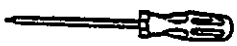
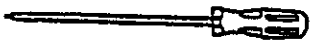
3.1 Precautions Concerning Parts Replacement

(1) Parts replacements must be carried out, by first turning the printer power switch off "O" and removing the High Capacity Second Paper Feeder from the printer.
(2) Do not disassemble the High Capacity Paper Feeder if it is operating normally.
(3) Establish the extent of disassembly suitable for the purpose of the procedure, and do not disassemble any more than necessary.
(4) Only specified service tools may be used.
(5) Disassembly must be carried out according to the prescribed procedures. Parts may be damaged if such procedures are not followed.
(6) Small parts such as screws and collars can easily be lost, therefore these parts should be temporarily fixed in the original location.
(7) When handling printed circuit boards, do not use any glove which may generate static electricity.
(8) Do not place the printed circuit boards directly on the equipment or floor.

[Service Tools]

Table 3-1 shows the tools required for the replacement of printed circuit boards and units in the field.

Table 3-1 Service Tools

No.	Service Tools		Q' ty	Place of use	Remarks
1		No. 1-100 Philips screwdriver	1	2~2.5 mm screws	
2		No. 2-100 Philips screwdriver	1	3~5 mm screws	
3		No. 3-100 screwdriver	1		
4		No. 5-200 screwdriver	1		
5		Digital multimeter	1		
6		Pliers	1		
7		Handy cleaner	1		

3.2 Parts Layout

This section describes the layout of the main components.

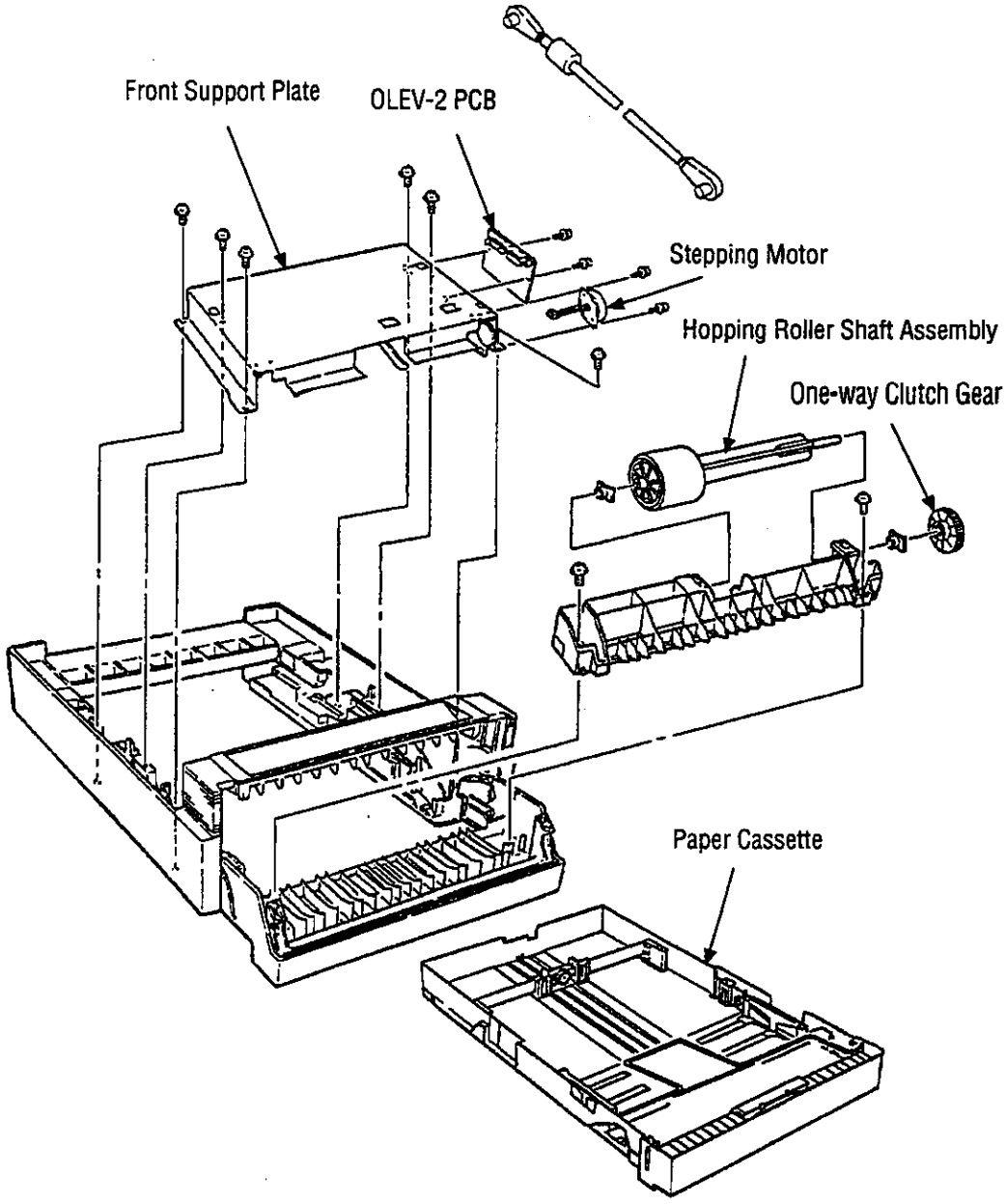
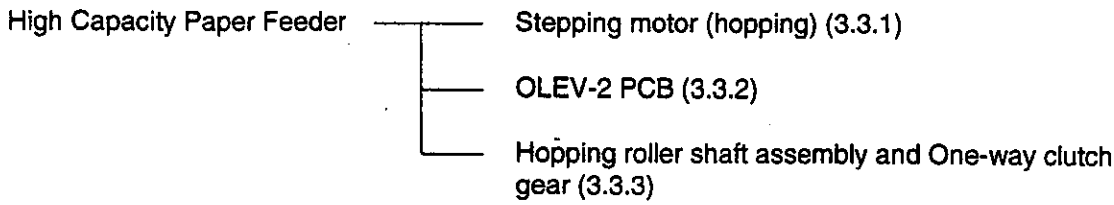


Fig. 3-1

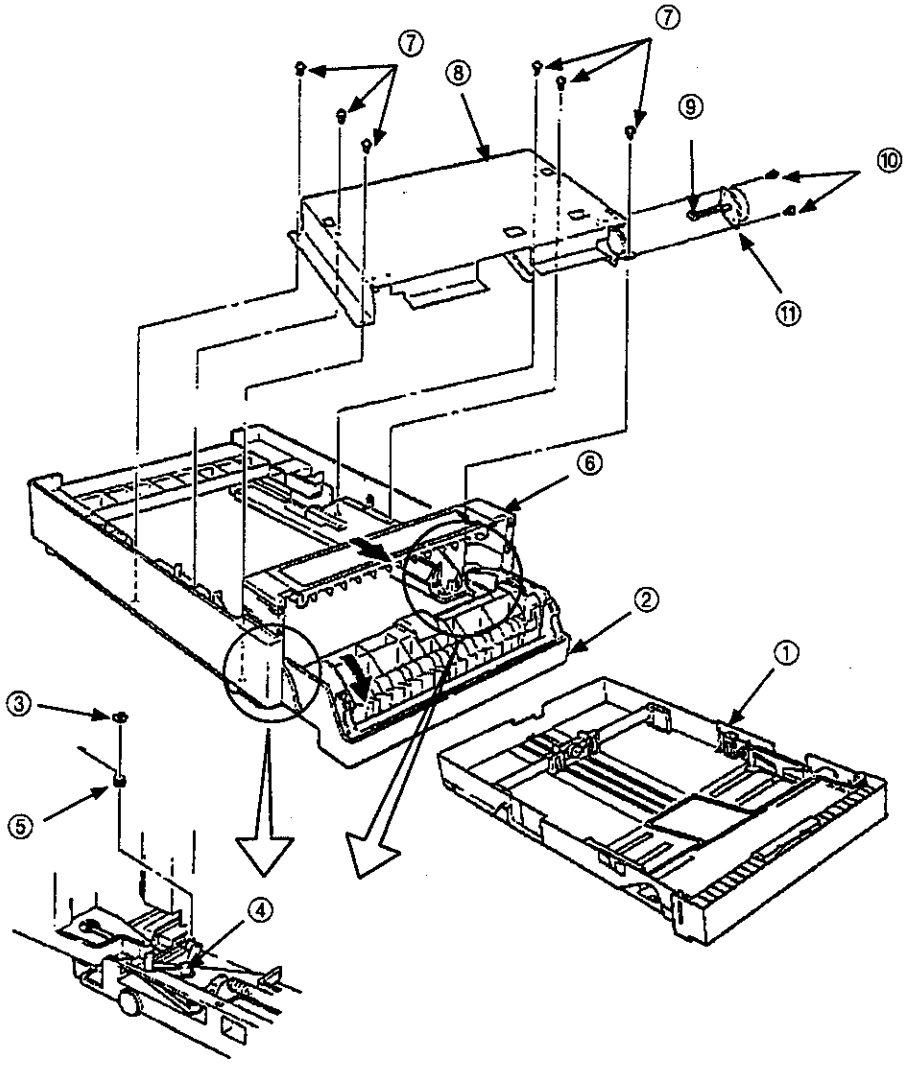
3.3 Parts Replacement Methods

This section describes the parts replacement methods for the components listed in the disassembly order diagram below.


High Capacity Paper Feeder
Stepping motor (hopping) (3.3.1)
OLEV-2 PCB (3.3.2)
Hopping roller shaft assembly and One-way clutch gear (3.3.3)

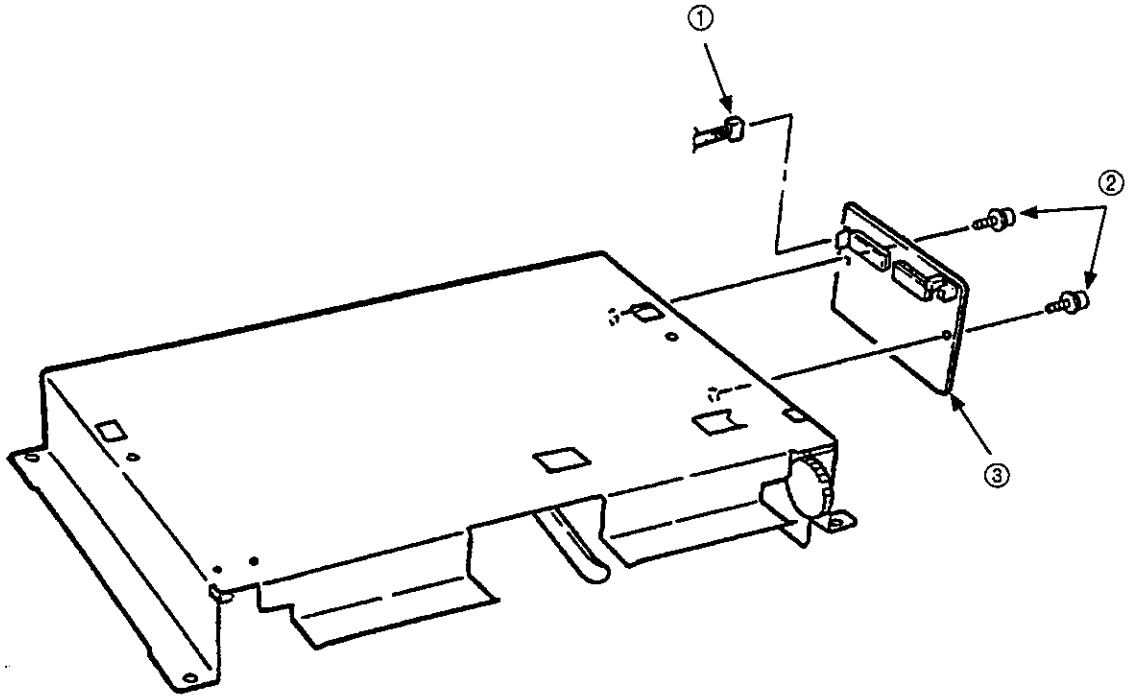
3.3.1 Stepping Motor (Hopping)

(1) Turn the printer power switch off "O" and remove the interface cable.
(2) Remove the paper casette ①.
(3) Open the Front cover ②, stand the High Capacity Second Paper Feeder vertically and remove the 2 E-clamps ③.
(4) Remove the 2 levers ④, and remove the tension springs ⑤.
(5) Pull out the sheet guide ⑥ to the front.
(6) Remove the 6 screws ⑦, and remove the front support plate ⑧.
(7) Remove the connector ⑨ and the 2 screws ⑩, and remove the stepping motor ⑪.



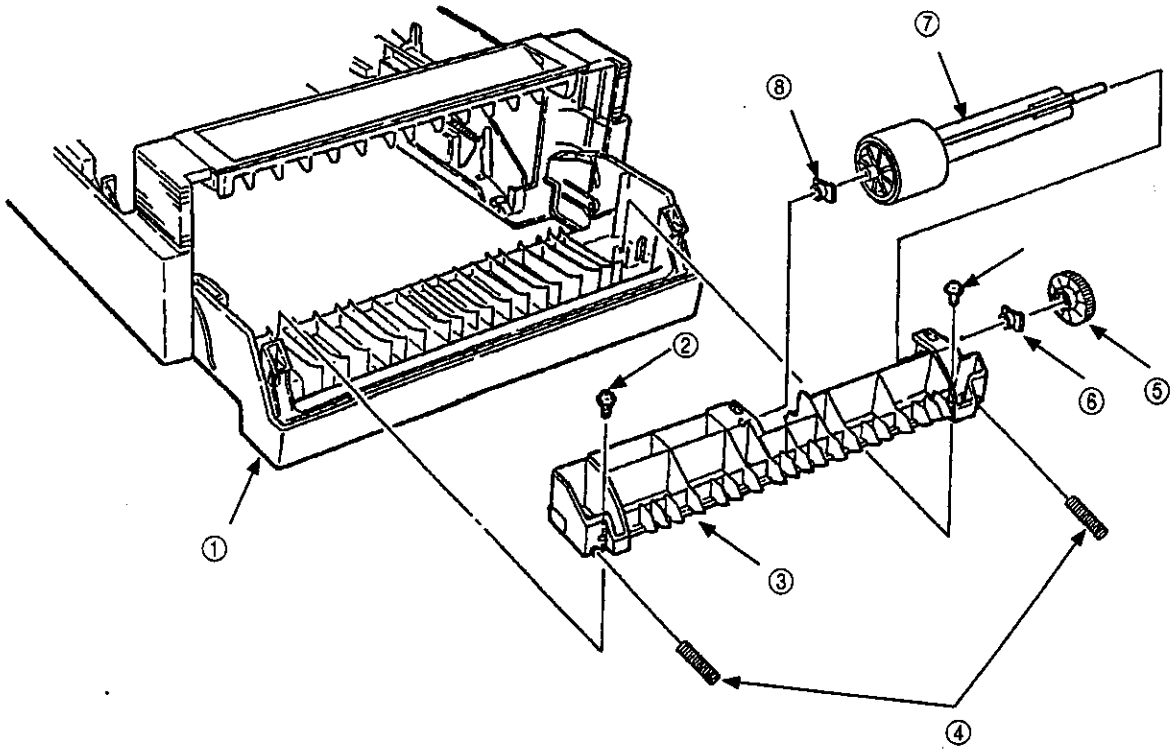
3.3.2 OLEV-2 PCB

(1) Remove the front support plate (see 3.3.1 steps (1) through (6)).
(2) Remove the connector ①, and the 2 screws ②, then remove the OLEV-2 PCB.



3.3.3 Hopping Roller Shaft Assembly and One-way Clutch Gear

(1) Open the front cover ①.
(2) Remove the 2 screws ②, and remove the hopping roller frame (be careful not to lose the Springs ④ when you do this, since it comes off).
(3) Remove the One-way clutch gear ⑤.
(4) Remove the bush-A ⑥, and remove the hopping roller shaft assembly ⑦ (be careful not to lose the bush-B ⑧ when you do this, since it comes off).



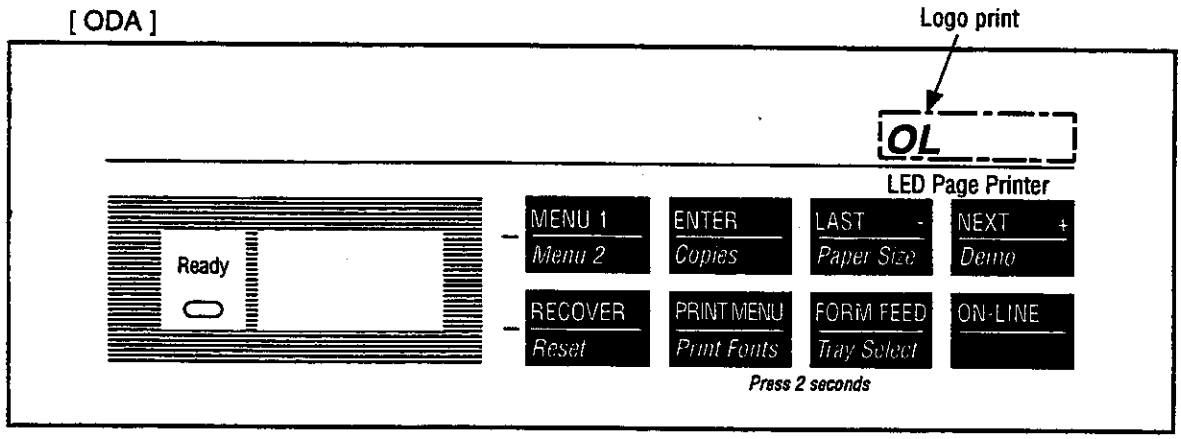
4. TROUBLESHOOTING

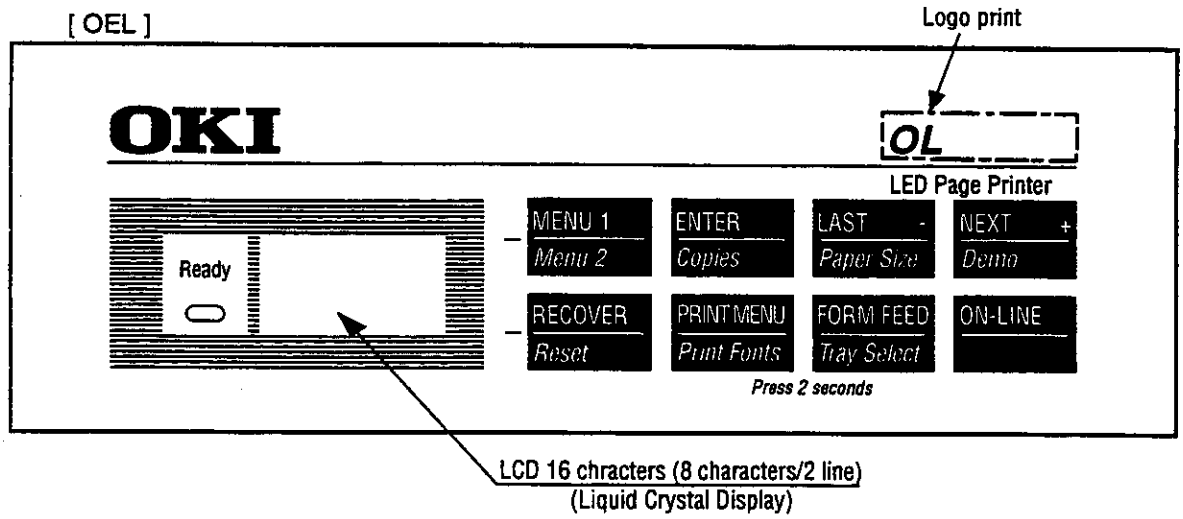
4.1 Precautions Prior to the Troubleshooting

(1) Go through the basic checking items provided in the Operator Guide.
(2) Obtain detailed information concerning the problem from the user.
(3) Go through the checking in the conditions similar to that in which the problem occurred.

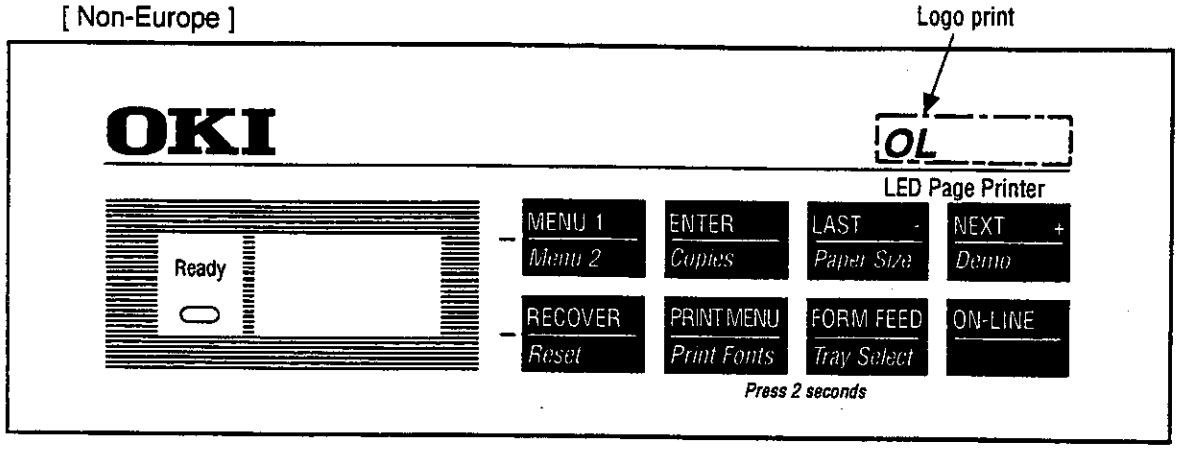
4.2 Preparations for the Troubleshooting

(1) Display on the Operator panel
The status of the problem is displayed on the LCD (Liquid Crystal Display) on the Operator panel. Go through the appropriate troubleshooting procedures according to the messages displayed on the LCD.





[Non-Europe]



Logo print
OL400e
OL400ex
OL410e
OL410ex

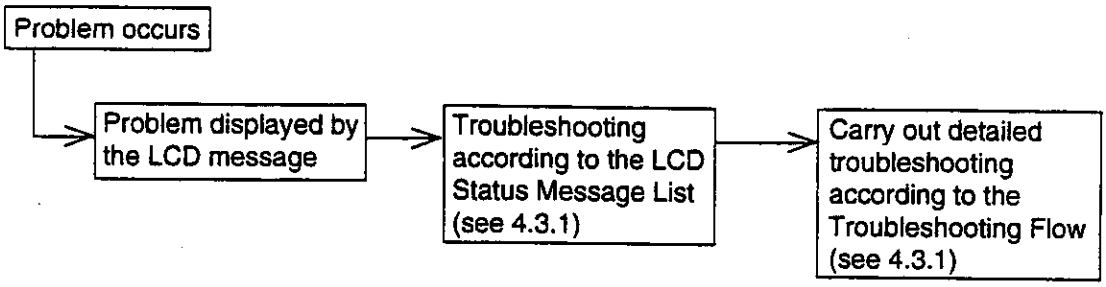
Status message display

Ready LED display

■ : OFF ▨ : ON ⊠ : BLINKING ▭ : Undefined

4.3 Troubleshooting Method

When a problem occurs, go through the troubleshooting according to the following procedure.


Problem occurs
Problem displayed by the LCD message
Troubleshooting according to the LCD Status Message List (see 4.3.1)
Carry out detailed troubleshooting according to the Troubleshooting Flow (see 4.3.1)

4.3.1 LCD Status Message List

The listing of the statuses and problems displayed in the form of messages on the LCD is provided in Table 4-1.

Classification	LCD Status Message	Description	Recovery method
Jam error	■ □	Notifies of occurrence of jam while the paper is being fed from Hign Capacity Paper Feeder.	• Check the paper in the High Capacity Paper Feeder. Carry out the recovery printing by opening and closing the cover, and turn the error display off. • When the problem occurs frequently, to through the Troubleshooting.
Paper size error	■ □	Notifies of incorrect size paper feeding from High Capacity Paper Feeder.	• Check the paper in the High Capacity Paper Feeder. Also check to see there was a feeding of multiple sheets. Carry out the recovery printing by opening and closing the cover, and tyrn the error display off.
Tray paper out	■ □	Notifies of no paper or paper cassette state of the High Capacity Feeder.	• Load the paper or paper cassette in High Capacity Paper Feeder.

• (JAM error)

Paper Inlet Jam

• Does paper jam at the inlet when the power is turned on?

- • YES Is the paper located above the sensor plate (Inlet)?
  - • YES Remove the paper.
- • NO Is the sensor plate (Inlet) operating normally?
  - • NO Replace the sensor plate (Inlet).
- • YES Replace the power supply board or inlet sensor.

• NO When the paper is fed in, does the paper inlet jam occur?

- • YES Is the paper being fed to above sensor plate (Inlet)?
  - • YES Is the sensor plate (Inlet) operating normally?
    - • NO Replace the sensor plate. (Inlet)
  - • YES Clean the inlet sensor on the power supply board or replace the power supply board or inlet sensor.
- • NO Replace the hopping roller shaft assy or paper cassette.

• NO Is the hopping roller shaft rotating?

- • YES Set the paper properly.

• NO Is the stepping motor turning?

- • YES Replace the one-way clutch gear on the hopping roller shaft assembly.

• NO Is the connector cable being connected properly?

- • NO Connect the connector cable properly.

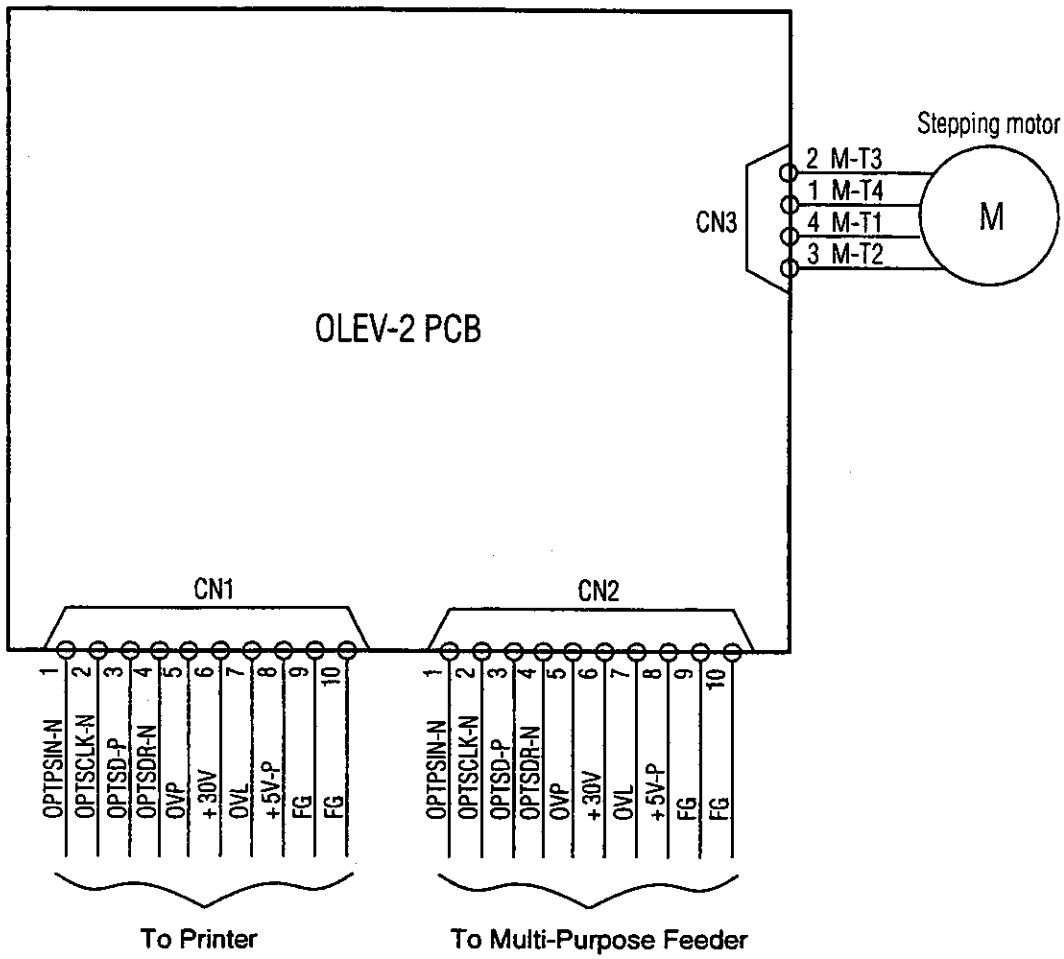
• YES Check the coil resistance (approx. 32Ω) of the stepping motor. Is is normal?

- • NO Replace the stepping motor.

• YES Replace the OLEV-12 PCB.

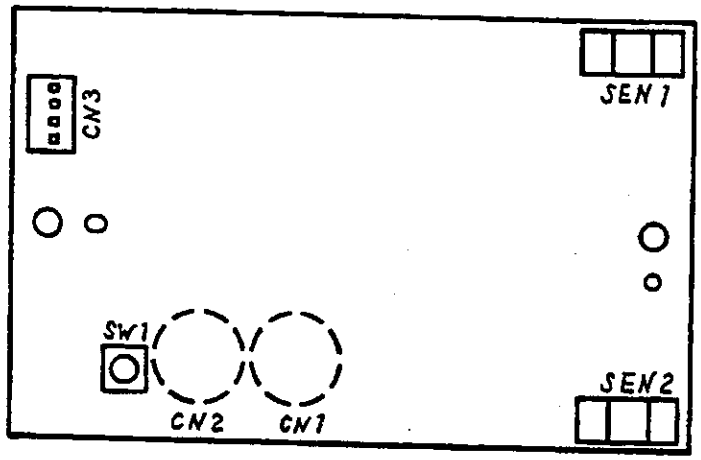
5. CONNECTION DIAGRAM

5.1 Interconnection Diagram



5.2 PCB Layout

OLEV-2 PCB



6. PARTS LIST

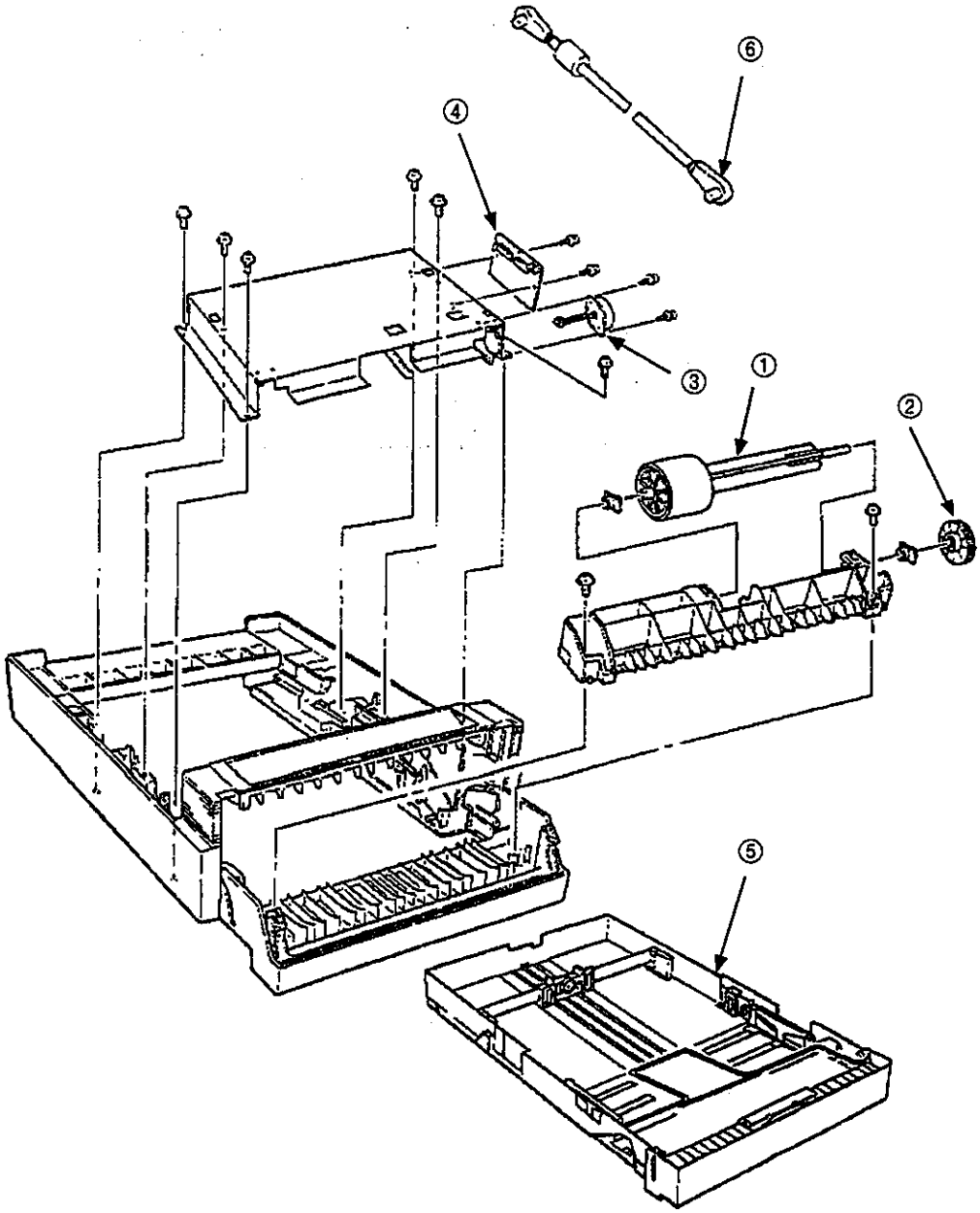
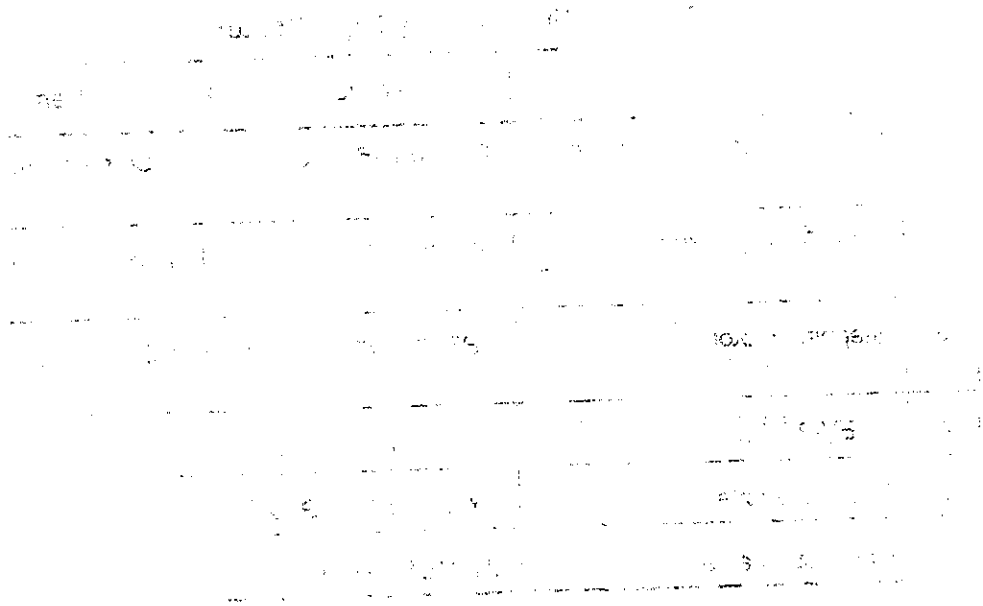


Figure 6-1 High Capacity Paper Feeder

Table 6-1 High Capacity Paper Feeder

No.	Description	Part No.	Q'ty	Remark
1	Hopping roller shaft assembly	3PA4083-6019G1	1	Same as the printer unit.
2	One-way clutch gear	4PB4083-6024P1	1	Same as the printer unit.
3	Stepping motor	4PB4083-6075P1	1	Same as the printer unit.
4	OLEV-2 PCB	4YA4121-1014G12	1	
5	Paper cassette	4YA4083-6270G10	1	
6	Connector cable	3YS4011-3140P1	1	



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